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Fiducial Reference For The HIPPARCOS Reference System

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Final Report

For The Period 1 February 1984 to 31 January 1987

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Fiducial Reference For The HIPPARCOS Reference System

NASA Grant NAGW233 Final Report

The purpose of the grant was to prepare the ground work for observations by the Hubble Space Telescope (HST) to tie the coordinate system of the European Astrometry Satellite HIPPARCOS to an extragalactic (VLBI) reference frame, and to determine the rotation of the HIPPARCOS frame with respect to the extragalactic frame.

The European Space Agency plans to launch an astrometric satellite to establish the most accurate relative stellar coordinate system of positions and motions ever determined. However, the system must be tied to a non-rotating foundation to be used for studies of physical motions of objects and for the studies of relativistic effects.

The Hubble Space Telescope will provide a means of accurately measuring the relative positions and motions of bright objects with respect to faint ones in a small field of view. The expected accuracy (0.002 arcsec, rms) is an order of magnitude better than the accuracies obtained by current optical techniques for the same measurements.

The grant resulted in the determination of 90 Extragalactic optical objects (EGOs) in the vicinity (angular separation less than 18 arcminutes) of 160 HIPPARCOS stars (brighter than about 11.0 magnitude, mostly SAO stars brighter than 10.5), evenly distributed over the sky, to be used to tie the HIPPARCOS system to the Extragalactic Reference Frame. The pairs

are to be observed with the HST Fine Guidance Sensors (FGS), sometimes in conjunction with the HST Planetary Camera, in order to determine the relative positions and motions of the individual HIPPARCOS stars with respect to the EGOs. The initial observations with HST will be performed using some of the Guaranteed Observing Time (GTO) of two of the proposers.

In order to insure that the observations will be made and will be of use to the HIPPARCOS project, several conditions must be obtained. The primary purpose of this grant was to work toward several of these conditions. The conditions addressed by the work of this grant were:

A) The stars had to be within one FGS field of view of an extragalactic object (about 18 arcminutes along the longest dimension). Therefore, a region around each prospective EGO was searched for SAO stars, and for other, non-catalogued suitable anonymous stars.

B) The extragalactic objects must be observable by HST. (The limiting magnitude of the FGSs is nominally 17th. However, by using a mode of observation which incorporates Planetary Camera exposure of the "targets" and with the astrometric information from the Guide Stars, fainter EGOs may be reached.) Therefore, an extensive search of the literature was conducted, as well as consultation with workers in the field (particularly members of the IAU working group on Optical Identifications of Radio Sources) to determine the most suitable EGOs. From more than 500 candidates, for which accurate positions, flux densities, optical identifications, and radio visibilities from the VLA and VLBI were available, 90 EGOs were finally chosen. Much of the data became available during the course of this work, and we are indebted to many people for allowing us to use their

data in advance of publication, many times in preliminary form.

C) The EGO-HIPPARCOS star pairs must be evenly distributed on the sky. To this end, many "old favorite" radio sources were not included because an EGO-HIPPARCOS star pair in the same region of the sky was deemed more suitable. Space Telescope time will be at a premium, and many times, a slightly less suitable 16th magnitude QSO was chosen over an otherwise more suitable (from the point of view of the visibility function, for example) 19th magnitude QSO which would require too much observing time. Also, the usual circumstance of a lack of suitable objects in the southern hemisphere was attacked by massive efforts of Noel Argue, Dave Jauncey, Grahaem White, and others, in both the radio and optical frequencies.

D) When possible, the EGOs should be optically identified radio sources with compact cores which allow them to be included in the radio reference frame derived from radio interferometric observations. When possible, the EGOs were selected from the IAU list of recommended Radio Source Position Standards, (Argue, et.al., 1984.) In some cases, the only object bright enough to observe in a particular part of the sky was a radio quiet EGO. These objects were included because the problem of stopping the rotation of the HIPPARCOS system is independent of the radio reference frame.

E) The stars must be bright enough to be observed with HIPPARCOS (ie. brighter than about 12.0, and brighter than 10.5 for full accuracy). The initial selection was made from the SAO catalogue, using a computer search around candidate EGOs. Other EGOs were measured on the UTRAO Laser Measuring Engine and positions of candidate stars determined from glass

copies of the National Geographic Society, Palomar Sky Survey, at the University of Texas.

F) The stars must be included in the HIPPARCOS INPUT CATALOGUE (INCA) in order to be observed by HIPPARCOS at all. An initial selection of 414 stars was submitted to the HIPPARCOS project in 1982, for inclusion in the INCA. This program was given the highest priority by the HIPPARCOS project; the southern extension was a major undertaking in support of the HST program. We have worked closely with various elements of the HIPPARCOS project to determine which of the stars would be included in the final catalogue. HIPPARCOS observability was and is a major concern. We have followed closely the successive simulations of the HIPPARCOS mission, and have had many discussions with the INCA project about the final selection of the stars to be observed with HST. Dr. Catherine Turon, Dr. Noel Argue, and Dr. Jean Kovalevsky have spent innumerable hours with us working to refine the list and determine the observability of these stars by the HIPPARCOS satellite. HST observations would be useless without the corresponding HIPPARCOS observations, and vice versa.

G) Since the FGSs are interferometers, the stars must be small enough in angular extent to be observed with the FGSs. Recognizing this fact, we undertook a massive program of Speckle Interferometry on as many of the 414 stars as possible. Drs. Otto Franz and Harold McAlister used the Georgia State University Speckle Camera to obtain speckle observations of several hundred stars, from which the final selection in the northern hemisphere was made. This work was funded as part of this project. Dr. Noel Argue and Brian Morgan undertook speckle observations with the

AAT in the southern hemisphere. Speckle observations have shown that most of the stars in the final list are not multiple at the 0.04-0.08 arcsec level, at the time the observations were made. Therefore, we have an excellent chance to observe them without duplicity problems with the FGSs.

The final output from this work is the inclusion of the program objects in both the HST and the HIPPARCOS programs of observation. The GTO observations will be insufficient to make the final HIPPARCOS reductions, but they will give the first epoch observations and many second epoch observations to determine the "system solution." General Observer observations are planned on a limited basis, but over a longer period of time to determine the most accurate motion possible of the HIPPARCOS system with respect to the Extragalactic system using this technique.

Table one is the Data Base which contains the optical information used to generate the HST GTO observing proposal. Table two is the star list supplied to Franz and McAlister. The Bibliography contains reports presented in various forums concerning the progress of this work.

### References

Duncombe, R. L., Hemenway, P. D. and Whipple, A. L., "Minor Planet Observations and the Fundamental Reference System," Celestial Mechanics Journal, Vol. 34, 1984, pp 19-38.

Jefferys, W. H., Benedict, G. F., Hemenway, P. D., Shelus, P. J. and Duncombe, R. L., "Prospects for Astrometry With the Hubble Space Telescope", Celestial Mechanics Journal, Vol. 37, 1985, pp 299-306.

Hemenway, P. D., Duncombe, R. L., Jefferys, W. H., and Shelus, P. J., "Using Space Telescope to Tie the HIPPARCOS and Extragalactic Reference Frames Together", ESA Special Publication SP-234 "HIPPARCOS - Scientific Aspects of the Input Catalog Preparation," 1985.

Hemenway, P. D. and Duncombe, R. L., "The Use of Space Telescope to Tie the HIPPARCOS Reference Frame to an Extragalactic Reference Frame," Proceedings of IAU Symposium #109, Gainseville, Florida, 1986, pp 613-624.

Hemenway, P. D., "The Use of the Hubble Space Telescope for Global Reference Frame Work," IAU Highlights of Astronomy", Vol. 7, 1986, pp 87-89.

HST HIPPARCOS - EXTRAGALACTIC TIE.

DATA BASE  
PAUL HEMENWAY - University of Texas

HIP-EGO Data  
HIP-EGO - EXTRAGALACTIC TIE.

	A	B	C	D	E	F	G
1	EGO	01109+2244	01111+0211	0133+476	0134+329	0138-097	0150-334
2	GTO/GO	GTO	GTO	GTO/WFFPC	GTO	GTO	GO
3	hr	1	1	1	1	1	1
4	min	9	13	36	34	41	50
5	sec	23.611	43.144	58.595	49.82	25.832	56.8
6	dec sign	1	1	1	1	-1	-1
7	deg	22	2	47	32	-9	-33
8	arcmin	28	22	51	54	28	25
9	arcsec	44.1	17.3	29.104	20.2	43.69	11
10	equinox	1950	2000	2000	1950	2000	1950
11	Vmag	15.5	16.3	18	16.2	18	16.5
12	B-V						
13	RA err(s)	0.06	0.002	0.0005	0.03	0.003	0.1
14	DEC err(")	1	0.03	0.002	0.5	0.04	1
15	V err(m)	1	1	1	1	1	1
16	RA (deg)	17.3483792	18.4297667	24.2441458	23.7075833	25.3576333	27.7366667
17	DEC (deg)	22.4789167	2.37147222	47.8580844	32.9056111	-9.4788028	-33.419722
18	RAerr(deg)	0.00025	8.3333E-06	2.0833E-06	0.000125	0.0000125	0.00041667
19	DECerr(deg)	0.00027778	8.3333E-06	5.5556E-07	0.00013889	1.1111E-05	0.00027778
20	HIP*1	INCA163-1	INCA163-5	INCA163-11	INCA163-14	INCA163-18	INCA220-90
21	Speckle OK?	Lowell	Lowell	Lowell	Lowell	Lowell	0
22	HIP*2	INCA163-3	0	INCA163-12	0	0	0
23	Speckle OK?	Lowell	0	Lowell	0	0	0
24	HIP*3	0	0	0	0	0	0
25	Speckle OK?	0	0	0	0	0	0
26	HIP*4	0	0	0	0	0	0
27	Speckle OK?	0	0	0	0	0	0
28	HIP*5	0	0	0	0	0	0
29	Speckle OK?	0	0	0	0	0	0
30	HIP*6	0	0	0	0	0	0
31	Speckle OK?	0	0	0	0	0	0

TABLE I

~~HIP-6150 - EPPSS (test)~~  
~~HIP-6150 - EPPSS (w/ f.f.t.)~~  
~~HIP-6150 - EPPSS (w/ f.f.t.)~~

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	H	I	J	K	L	M	N	O
1	0153+744	0202-765	0241+622	0312-770	0316+413	0402-362	0405-123	0430+052
2	GTO	GTO	GTO	GTO/WFPC	GTO	GTO	GTO	GTO/WFPC
3	1	2	2	3	3	4	4	4
4	57	2	41	12	19	3	5	30
5	34.976	0.5	1.3	56.1	48.1603	53.75	27.46	31.46
6	1	-1	1	-1	1	-1	-1	1
7	74	-76	62	-77	41	-36	-12	5
8	42	34	15	3	30	5	19	15
9	43.26	29	27	1	42.107	1.91	32.3	1
10	2000	1950	1950	2000	2000	1950	1950	1950
11	16	16	16.4	15.9	15.1	16	14.8	14.8
12								
13	0.003	0.1	0.1	0.06	0.0002	0.001	0.06	0.06
14	0.04	1	1	1	0.002	0.01	1	1
15	1	1	1		1	1	1	1
16	29.3957333	30.50208333	40.2554167	48.233375	49.9506679	60.9739583	61.3644167	67.6310833
17	74.7120167	-76.5747222	62.2575	-77.0502778	41.5116964	-36.083864	-12.325639	5.25027778
18	0.0000125	0.000416667	0.000416667	0.00025	8.3333E-07	4.16667E-06	0.00025	0.00025
19	1.1111E-05	0.000277778	0.000277778	5.5556E-07	2.7778E-06	0.00027778	0.00027778	0.00027778
20	INCA163-23	INCA220-101	INCA163-37	INCA220-184	INCA163-41?	INCA220-240	INCA163-48?	INCA163-58
21	Lowell	0	Lowell	0	Lowell	0	Lowell	Lowell
22	0	INCA220-102	INCA163-98	0	0	0	INCA163-44	INCA163-49
23	0	0	0	0	0	0	Argue	INCA48-184
24	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0

	P	Q	R	S	T	U	V	W
1	0454+844	0528-250	0537-441	0607-157	0637-752	0716+714	0736+017	0818-128
2	GTO	GTO	GTO	GTO	GTO	GTO	GTO	GTO
3	5	5	5	6	6	7	7	8
4	8	30	38	9	35	21	39	18
5	42.363	7.964	50.361	40.95	46.517	53.448	18.032	36.24
6	1	-1	-1	-1	-1	1	1	-1
7	84	-25	-44	-15	-75	71	1	-12
8	32	3	5	42	16	20	37	49
9	4.561	29.8	8.94	40.67	16.86	36.44	4.64	24.9
10	2000	2000	2000	2000	2000	2000	2000	1950
11	16.5	17	15.5	17	15.8	13.2	18	16
12								
13	0.01	0.005	0.005	0.001	0.026	0.003	0.003	0.06
14	0.009	0.04	0.02	0.02	0.1	0.05	0.04	1
15	1	1	1	1	1	1	1	1
16	77.1765125	82.5331833	84.7098375	92.420625	98.94382083	110.4727	114.825133	124.651
17	84.5346003	-25.058278	-44.085817	-15.711297	-75.27135	71.3434556	1.61795556	-12.823583
18	4.1667E-05	2.0833E-05	2.0833E-05	4.1667E-06	0.000108333	0.0000125	0.0000125	0.00025
19	0.00000025	1.1111E-05	5.5556E-06	5.5556E-06	2.77778E-05	1.3889E-05	1.1111E-05	0.00027778
20	INCA163-59?	INCA163-62	INCA163-66	INCA163-72	INCA220-507	INCA163-83	INCA163-90?	INCA163-97
21	Lowell	Argue	Lowell,xArgue	Argue	Lowell	Lowell	Lowell	Lowell
22	0	INCA110-641	HGCA220-409	INCA163-76	0	INCA163-84	0	0
23	0	0	Argue—Adv.	Argue	0	Lowell	0	0
24	0	0	INCA220-414	0	0	0	0	0
25	0	0	?Argue?	0	0	0	0	0
26	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0

	X	Y	Z	AA	AB	AC	AD	AE
1	0.826-373	0828+493	0836+710	0851+202	0912+297	0923+392	0955+326	1020-1031
2	GTO							
3	8	8	8	8	9	9	9	9
4	28	32	41	54	12	27	55	20
5	4.785	23.214	24.3678	48.8751	53.47	3.0138	25.44	4.07
6	-1	1	1	1	1	1	1	-1
7	-37	49	70	20	29	39	32	-10
8	31	13	53	6	45	2	38	22
9	6.19	21.04	42.177	30.634	55.4	20.849	23.2	31.7
10	2000	2000	2000	2000	1950	2000	1950	1950
11	16	17.5	16.5	14.5	16.3	17.8	15.78	16.5
12								
13	0.006	0.006	0.0008	0.0003	0.06	0.0003	0.06	0.06
14	0.04	0.04	0.003	0.003	1	0.002	1	1
15	1	1	1	1	1	1	1	1
16	127.019938	128.096725	130.351533	133.703646	138.222792	141.762558	148.856	155.016958
17	-37.518386	49.2225111	70.8950492	20.1085094	29.7653889	39.0391247	32.6397778	-10.375472
18	0.000025	0.000025	3.3333E-06	0.00000125	0	0.00000125	0.00025	0.00025
19	1.1111E-05	1.1111E-05	8.3333E-07	8.3333E-07	0.0027778	5.5556E-07	0.00027778	0.00027778
20	INCA163-101	INCA163-103	INCA163-107	INCA163-110	INCA163-114	INCA163-119	INCA163-124	INCA163-127
21	Argue	Lowell						
22	INCA163-102	INCA163-105	0	0	0	INCA163-120	0	0
23	0	Lowell	0	0	0	Lowell	0	0
24	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0

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	AF	AG	AH	AI	AJ	AK	AL	AM
1	1038+064	1101-325	1116-462	✓ 1144-379 ✓	1159-515 ✓	1206-399 ✓	1211+334	1215+303
2	GTO	GO	GO	GTO	GO	GO	GTO	GTO
3	10	11	11	11	11	11	12	12
4	41	1	16	47	59	6	11	15
5	17.162	8.1	6.1	1.3704	30	59.6	32.6	21.14
6	1	-1	-1	-1	-1	-1	1	1
7	6	-32	-46	-38	-51	-39	33	30
8	10	35	17	12	30	59	26	23
9	16.94	1	51	11.03	0	31	18	39.9
10	2000	1950	1950	2000	1950	1950	1950	1950
11	16.5	15.4	17	16.2	16.1	16.1	17	15.25
12								
13	0.001	0.06	0.06	0.0008	360	0.06	0.06	0.06
14	0.05	1	1	0.01	180	1	1	1
15	1	1	1	1	1	1	1	1
16	160.321508	165.28375	169.025417	176.75571	179.875	181.748333	182.885833	183.838083
17	6.17137222	-32.583611	-46.2975	-38.203064	-51.5	-39.991944	33.4383333	30.3944167
18	4.1667E-06	0.00025	3.3333E-06	1.5	0.00025	0.00025	0.00025	0.00025
19	1.3889E-05	0.00027778	2.7778E-06	0.05	0.00027778	0.00027778	0.00027778	0.00027778
20	INCA163-135	INCA220-798	INCA220-826	INCA163-148	INCA220-894	INCA220-899	INCA163-156	INCA163-157
21	Lowell	0	Argue	0	0	0	Lowell	Lowell
22	INCA163-133	INCA220-800	INCA220-827	INCA220-876	INCA220-895	INCA220-902	0	0
23	Lowell Argue	0	Argue	0	0	0	0	0
24	0	0	INCA220-828	0	INCA220-897	CD-39.7491	0	0
25	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0

	AN	AO	AP	AQ	AR	AS	AT	AU
1	1219+285	1226+023	1244-255	1302-102	1404+286	1416+067	1418+546	1435+638
2	GTO	GTO/WFPC	GTO	GTO	GTO	GTO	GTO	GTO
3	12	12	12	13	14	14	14	14
4	21	29	46	5	7	16	19	36
5	31.681	6.6997	46.802	33.016	0.3935	39.09	46.5976	45.8
6	1	1	-1	-1	1	1	1	1
7	28	2	-25	-10	28	6	54	63
8	13	3	47	33	27	42	23	36
9	58.44	8.59	49.3	19.6	14.665	20.8	14.783	37.86
10	2000	2000	2000	2000	2000	1950	2000	2000
11	15	12.86	18	15.2	14	16.8	14.5	15
12								
13	0.01	0	0.001	0.007	0.0014	0.06	0.0003	0.003
14	0.04	0.005	0.01	0.1	0.018	1	0.003	0.05
15	1	1	1	1	1	1	1	1
16	185.382004	187.277915	191.695008	196.387567	211.75164	214.162875	214.944157	219.190833
17	28.2329	2.05238611	-25.797028	-10.555444	28.4540736	6.70577778	54.3874397	63.6105167
18	4.1667E-05	0	4.1667E-06	2.91667E-05	5.8333E-06	0.00025	0.00000125	0.0000125
19	1.1111E-05	1.3889E-06	2.7778E-06	2.7778E-05	0.000005	0.00027778	8.3333E-07	1.3889E-05
20	INCA163-160	INCA163-167	INCA163-172	INCA163-182	INCA163-201	INCA163-203	INCA163-207	INCA163-210
21	Lowell	Argue	Argue	Lowell	Lowell	Lowell	Lowell	Lowell
22	0	0	INCA163-170	INCA163-184	INCA163-200	INCA163-204	0	0
23	0	0	Argue	Argue?	Lowell	Lowell	0	0
24	0	0	0	INCA110-727	INCA163-202	0	0	0
25	0	0	0	Argue	Lowell	0	0	0
26	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0

	AV	AW	AX	AY	AZ	BA	BB	BC
1	1451-375 ✓	1510-089 ✓	1514-241	1546+027	1633+382	1727+502 ✓	1749+701	1758-651 ✓
2	GTO	GTO	GTO	GTO	GTO	GTO	GTO	GTO
3	14	15	15	15	16	17	17	17
4	51	12	14	49	35	27	48	58
5	18.2	50.533	45.28	29.435	15.493	4.33	32.8393	26
6	-1	-1	-1	1	1	1	1	-1
7	-37	-9	-24	2	38	50	70	-65
8	35	5	11	37	8	15	5	7
9	23	59.839	22	1.15	4.5	31.2	50.771	47
10	1950	2000	1950	2000	2000	1950	2000	1950
11	16.4	16.5	13.8	18	18	16	16.5	15.4
12								
13	0.06	0.001	0.06	0.003	0.001	0.06	0.0008	0.06
14	1	0.008	1	0.04	0.01	1	0.003	1
15	1	1	1	1	1	1	1	1
16	222.8258333	228.210554	228.688667	237.372646	248.814554	261.768042	267.13683	269.608333333
17	-37.5897222	-9.0999553	-24.189444	2.61698611	38.1345833	50.2586667	70.0974364	-65.129722222
18	0.00025	4.1667E-06	0.00025	0.0000125	4.1667E-06	0.00025	3.3333E-06	0.00025
19	0.000277778	2.2222E-06	0.00027778	1.1111E-05	2.7778E-06	0.00027778	8.3333E-07	0.0002777778
20	INCA163-216?	INCA163-225	INCA163-228	INCA163-233	INCA163-239	INCA163-263	0	INCA220-1286
21	Argue?	Lowell, Argue	Lowell, Argue	Lowell	Lowell	Lowell	0	0
22	INCA163-217	0	INCA163-231	0	INCA163-240	INCA163-262	INCA 163-271	INCA220-1289
23	Argue ?	0	Argue	0	Lowell	Lowell	0	0
24	INCA220-1146	0	0	0	INCA163-241	0	0	INCA220-1295
25	0	0	0	0	Lowell	0	0	0
26	INCA220-1153	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0

	BD	BE	BF	BG	BH	BI	BJ	BK
1	1821+107	1830+285	1912-550	1921-293	1928+738	2005-489	2007+776	2044-168✓
2	GTO	GTO	GO	GTO	GTO	GO	GTO	GTO
3	18	18	19	19	19	20	20	20
4	24	30	12	24	27	5	5	20
5	2.8553	52.4	35.2	51.0558	48.49	47.2	31.001	30.78
6	1	1	-1	-1	1	-1	1	-1
7	10	28	-55	-29	73	-48	77	-16
8	44	31	0	14	58	58	52	50
9	23.771	16.6	8	30.11	1.55	38	43.22	9.4
10	2000	1950	1950	2000	2000	1950	2000	1950
11	16	17	16.6	17	15.5	16	16.5	16.9
12								
13	0.0004	0.06	0.06	0.0008	0.002	0.06	0.006	0.06
14	0.005	1	1	0.02	0.02	1	0.04	1
15	1	1	1	1	1	1	1	1
16	276.0118971	277.718333	288.1466667	291.212733	291.9520417	301.4466667	301.3791708	311.12825
17	10.73993639	28.5212778	-55.0022222	-29.241697	73.96709722	-48.9772222	77.87867222	-16.835944
18	1.66667E-06	0.00025	0.00025	3.3333E-06	8.33333E-06	0	0.00025	0.00025
19	1.38889E-06	0.00027778	0.00027778	5.5556E-06	5.55556E-06	0.000277778	1.11111E-05	0.00027778
20	INCA163-290?	INCA163-296	0	INCA163-303	INCA163-304?	INCA220-1427	INCA163-316	INCA163-334
21	Lowell,Argue	Lowell	0	Argue	Lowell	0	Lowell	Argue
22	INCA163-287	0	INCA220-1335	INCA56-122	INCA163-305?	0	INCA163-321	0
23	Lowell	0	Argue?	Lowell	Lowell	0	Lowell	0
24	INCA163-289	0	INCA220-1334	0	INCA220-1430	0	INCA163-333	0
25	Argue double	0	0	0	0	0	Argue	Argue
26	0	0	0	0	0	0	INCA163-317?	0
27	0	0	0	0	0	0	Lowell	0
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0

	BL	BM	BN	BO	BP	BQ	BR	BS
1	2128-123	2134+004	2200+420 ✓	2227-088	2232-488 ✓	2234+282	2245-328	2251+158
2	GTO	GTO	GTO/WFPC	GTO	GO	GTO	GO	GTO
3	21	21	21	22	22	22	22	22
4	31	36	2	29	32	36	48	53
5	35.26	38.5861	43.2912	40.082	11.5	22.4708	38.6857	57.748
6	-1	1	1	-1	-1	1	-1	1
7	-12	0	42	8	-48	28	-32	16
8	7	41	16	32	51	28	35	8
9	4.81	54.214	39.982	54.43	31	57.417	52.17	53.563
10	2000	2000	2000	2000	1950	2000	2000	2000
11	16	18	14	18	17	19	18.6	16.1
12								
13	0.0005	0.0006	0.0002	0.003	0.06	0.001	0.0018	0.001
14	0.02	0.008	0.002	0.04	1	0.003	0.11	0.006
15	1	1	1	1	1	1	1	1
16	322.8969167	324.1607754	330.68038	337.417008	338.04791667	339.093628	342.1611904	343.4906167
17	-12.1180028	0.698392778	42.2777728	-8.5484528	-48.85861111	28.4826158	-32.597825	16.14821194
18	2.08333E-06	0.0000025	8.3333E-07	0.0000125	0.00025	4.1667E-06	0.0000075	4.16667E-06
19	5.55556E-06	2.22222E-06	5.5556E-07	1.1111E-05	0.0002777778	8.3333E-07	3.05556E-05	1.66667E-06
20	INCA163-341? (INCA110-376)	0	INCA163-368	0	INCA163-369	0	0	0
21	Lowell, Argue ?	0	Lowell, Argue	0	Lowell	0	0	0
22	0	0	INCA163-359	INCA56-148	INCA220-1625	INCA163-370	INCA220-1641	INCA163-381?
23	0	0	Lowell	0	Lowell	Argue	Lowell	Argue
24	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0
26	INCA163-344	0	0	0	0	0	0	0
27	Argue	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0

## HIP-EGO Data

	BT	BU	BV	BW	BX	BY	BZ	CA
1	2254+074	/ 2255-282 ✓	2300-683	2326-477	2352+495	1150+49	1328+307	
2	GTO	GTO	GO	GO	GTO	WF/PC	WF/PC	
3	22	22	23	23	23		11	13
4	57	58	0	29	55	50	50	31
5	17.304	5.862	28	17.707	9.4599	47.98	8.284	
6	1	-1	-1	-1	1	1	1	
7	7	-27	-68	-47	49	49	49	30
8	43	58	23	30	50	47	47	30
9	12.27	23.04	47	19.19	8.332	49.7	32.94	
10	2000	2000	1950	2000	2000	1950	2000	
11	16.4	17	16.4	17	19	19	16.1	17
12								
13	0.004	0.007	0.06	0.01	0.0011	0.02	0.0014	
14	0.04	0.1	1	0.1	0.018	0.2	0.2	0.02
15	1	1	1	1	1	1	1	
16	344.3221	344.524425	345.1166667	352.3237792	358.789416	177.699917	202.784517	
17	7.720075	-27.973067	-68.3963889	-47.5053306	49.8356478	49.7971389	30.50915	
18	1.6667E-05	2.9167E-05	0.00025	4.16667E-05	4.5833E-06	8.3333E-05	5.8333E-06	
19	1.1111E-05	2.7778E-05	0.000277778	2.77778E-05	0.000005	5.5556E-05	5.5556E-06	
20	INCA163-389	INCA163-388	INCA220-1654	INCA220-1706	INCA163-414	INCA163-149	INCA163-190	
21	Lowell	Argue	Argue	Lowell		0	0	
22	INCA163-385	#REF!	INCA220-1659	INCA220-1712	0	0	0	INCA163-191
23	Lowell	INCA163-390	Argue	0	0	0	0	
24	0	0	INCA220-1657	0	0	INCA163-151	0	
25	0	0	1?	0	0	0	0	
26	0	0	0	0	0	0	0	
27	0	0	0	0	0	0	0	
28	0	0	0	0	0	0	0	
29	0	0	0	0	0	0	0	
30	0	0	0	0	0	0	0	
31	0	0	0	0	0	0	0	

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	CB	CC	CD	CE	CF	CG	CH	CI
1	1638+398	1641+399	2201+315		0113-118	0135-247	v	0237-233
2	WF/PC	WF/PC	WF/PC		ARGUE	ARGUE		0336-019
3	16	16	22		1	1		ARGUE
4	40	42	3		16	37		2
5	29.6327	58.8096	14.968		12.5222	38.346		3
6	1	1	1		-1	-1		39
7	39	39	31		11	-24		
8	46	48	45		36	30		
9	46.028	36.992	38.29		15.437	53.83		9
10	2000	2000	2000		2000	2000		46
11	18.5	16.3	14.5		18.5	16.9		
12								17.5
13	0.0003	0.001	0.004		0.0005	0.003		
14	0.002	0.003	0.01		0.007	0.04		
15	1	1	1		1	1		
16	250.12347	250.74504	330.812367		19.0521758	24.409775		
17	39.7794522	39.8102756	31.7606361		-11.604288	-24.514953		54.8789071
18	0.00000125	4.16667E-06	1.66667E-05		2.08333E-06	0.0000125		-1.7766119
19	5.5556E-07	8.33333E-07	2.77778E-06		1.9444E-06	1.1111E-05		2.08333E-06
20	INCA163-244	INCA163-246	INCA163-360		INCA56-16	INCA56-18		1.6667E-06
21	Lowell	xLowell	xLowell		Argue	Argue		INC A56-30
22	0	INCA163-247	INCA163-362		0	0		0 Argue
23	0	xLowell	xLowell		0	0		0 INC A56-27
24	0	0	0		0	0		0
25	0	0	0		0	0		0
26	0	0	0		0	0		0
27	0	0	0		0	0		0
28	0	0	0		0	0		0
29	0	0	0		0	0		0
30	0	0	0		0	0		0
31	0	0	0		0	0		0

	CJ	CK	CL	CM	CN	CO	CP	CQ
1	0440-003	0743-673✓	0859-140 ✓	1127-145✓	1148-001	1656+053	2155-152	2345-167
2	ARGUE	ARGUE	ARGUE	ARGUE	ARGUE	ARGUE	ARGUE	ARGUE
3	4	7	9	11	11	16	21	23
4	42	43	2	30	50	58	58	48
5	38.6606	31.518	16.8318	7.0523	43.8703	33.447	6.282	2.6088
6	-1	-1	-1	-1	-1	1	-1	-1
7	0	-67	-14	14	0	5	15	16
8	17	26	15	49	23	15	1	31
9	43.418	25.962	30.896	27.392	54.207	16.44	9.32	12.0233
10	2000	2000	2000	2000	2000	2000	2000	2000
11	18.5	17.0	16.8	16.9	17.6	17.5	18	18.3
12								
13	0.001		0.0005	0.003	0.0006	0.001	0.001	0.0003
14	0.008		0.008	0.006	0.01	0.01	0.01	0.005
15		1						
16	70.6610858	115.881325	135.570133	172.529385	177.682793	254.639363	329.526175	357.01087
17	-0.2953939	-67.440545	-14.258582	-14.824276	-0.3983908	5.25456667	-15.019256	-16.520006
18	4.1667E-06	0	2.0833E-06	0.00000125	0.00000025	4.1667E-06	4.1667E-06	0.00000125
19	2.2222E-06	0	2.2222E-06	1.6667E-06	2.7778E-06	2.7778E-06	2.7778E-06	1.3889E-06
20	INCA56-39	INCA56-55	INCA56-62	INCA56-77	INCA56-84	INCA56-107	INCA56-143	INCA56-164
21	Argue	0	Argue	Argue	Argue	Argue	Argue	Argue
22	0	0	INCA56-61	INCA56-76	INCA110-280	INCA56-108	INCA56-142	0
23	0	0	Argue	Argue ?	Argue	Argue	Argue	0
24	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0

ORIGINAL PAGE IS  
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	A	B	C	D	E	F	G
35	HIP*1	INCA163-1	INCA163-5	INCA163-11	INCA163-14	INCA163-18	INCA220-90'
36	Speckle OK?	Lowell	Lowell	Lowell	Lowell	Lowell	
37	HIP * 1	SAO74548	SAO109751	SAO37354	ANON14	SAO129448	INCA220-90'
38	Other Name			GC1942	221-9		CD-33.00650
39	hr	1	1	1	1	1	1
40	min	8	12	33	34	38	50
41	sec	58.192	5.738	35.085	50	48.395	30
42	dec sign	1	1	1	1	-1	-1
43	deg	22	2	47	32	9	33
44	arcmin	27	2	49	46	37	29
45	arcsec	26.04	7.69	7.26	34	26.84	11
46	equinox	1950	1950	1950	1950	1950	1950
47	epoch	1899	1937.9	1912.55		1933.7	
48	V magnitude	7.3	9.1	8.1	9	9.2	8.9
49	b magnitude	7.8	10.3	9.1	9.5	10.7	9.5
50	RA err(s)				0.1		
51	[RAerr(")]	0.15	0.17	0.21		0.16	
52	DEC err(")	0.14	0.17	0.21	1	0.16	
53	V err(m)						
54	RA (deg)	17.2424667	18.0239083	23.3961875	23.7083333	24.7016458	27.625
55	DEC (deg)	22.4572333	2.03546944	47.8186833	32.7761111	-9.6241222	-33.486389
56	RAerr(deg)	0	0	0	0.00041667	0	0
57	DECerr(deg)	3.8889E-05	4.7222E-05	5.8333E-05	0.00027778	4.4444E-05	0
58	mu ra (s/yr)	-0.0028	-0.0009	0.0031		-0.0013	
59	mu dec ("/yr)	-0.017	-0.003	-0.004		0.021	
60	Sep (E-*) (')	6.01431801	14.9107546	13.3429598	7.77009185	6.74176915	6.87552337
61	PA (E of N)	257.507188	106.794351	-14.48311	179.72141	-17.902433	234.424594
62	Date1						
63	Date2						
64	HIP pressure						
65		17.2424667	18.6678836	24.1612557	23.7083333	25.3226152	27.625
66		22.4572333	2.29966764	48.0734001	32.7761111	-9.3718804	-33.486389
67							

	H	I	J	K	L	M	N	O
35	INCA163-23	INCA220-101	INCA163-37	INCA220-184	INCA163-41?	INCA220-240	INCA163-48?	INCA163-58
36	Lowell	Lowell	Lowell	Lowell	Lowell	Lowell	Lowell	Lowell
37	ANON33	INCA220-101	ANON37	INCA220-184	ANON41?	INCA220-240	ANON48?	ANON58
38	1 221-15	1 221-16	BD+61.476	CPD-77.00133	221-23	CD-36.1581	1 221-27	SAO111893
39	1	1	2	3	3	4	4	4
40	53	58	41	14	15	1	5	31
41	12	3	11	9	52	45	32	11.225
42	1	-1	1	-1	1	-1	-1	1
43	74	76	62	77	41	36	12	5
44	22	35	22	12	5	18	17	17
45	51	3	53	50	25	38	33	9.51
46	1950	1950	1950	1950	1950	1950	1950	1950
47								1937.4
48	10	10.2	9.5	9	11.5	10.2		7.9
49	10			9.5	11.5	10.8	11.5	8.7
50								
51								0.17
52								0.17
53								
54	28.3	29.5125	40.2958333	48.5375	48.9666667	60.4375	61.3833333	67.7967708
55	74.3808333	-76.5841667	62.3813889	-77.2138889	41.0902778	-36.310556	-12.2925	5.285975
56	0	0	0	0	0	0	0	
57	0	0	0	0	0	0	0	4.7222E-05
58								-0.0058
59								-0.297
60	5.26543863	13.79715415	7.51855779	10.63236636	16.0756968	6.49194641	2.27661856	10.1285916
61	174.91398	267.6461274	8.63502452	157.4106233	206.296066	213.388106	29.1471974	77.791835
62								
63								
64								
65	29.4252391	29.5125	40.2958333	48.5375	49.7921589	60.900281	61.3833333	67.7967708
66	74.6246049	-76.5841667	62.3813889	-77.2138889	41.2714942	-36.174206	-12.2925	5.285975
67								

	P	Q	R	S	T	U	V	W
35	INCA163-59?	INCA163-62	INCA163-66	INCA163-72	INCA220-507	INCA163-83	INCA163-90?	INCA163-97
36	Lowell	Argue	Lowell,xArgue	Argue	Lowell	Lowell	Lowell	Lowell
37	ANON9?	SAO170501	SAO17442	SAO151166	SAO256316	ANON83	ANON90?	ANON97
38	help				CPD-75.00391	BD+71.390	BD+2.1725	BD-12.2472
39	4	5	5	6	6	7	7	8
40	47	28	36	6	36	14	36	18
41	0	48.798	43.481	52.239	26.537	23	8	51
42	1	-1	-1	-1	-1	1	1	-1
43	84	25	44	15	75	71	1	12
44	29	0	7	41	10	26	53	40
45	44	18.17	5.84	31.04	34.02	18	36	0
46	1950	1950	1950	1950	1950	1950	1950	1950
47		1933.9	1900.8	1933.1	1906.2			
48		9.7	8.8	8	9	9.4	9	9.6
49		10.1	9.5	8	9.2		10.4	11
50								
51		0.16	0.28	0.18				
52		0.16	0.26	0.16	0.63			
53								
54	71.75	82.203325	84.1811708	91.7176625	99.11057083	108.595833	114.033333	124.7125
55	84.4955556	-25.005047	-44.118289	-15.691956	-75.1761167	71.4383333	1.89333333	-12.666667
56	0	0	0	0	0	0	0	0
57	0	4.4444E-05	7.2222E-05	4.4444E-05	0.000175	0	0	0
58		-0.0019	0.0038	-0.0004	-0.0014			
59		-0.001	0.023	-0.013	-0.02			
60	11.6611366	11.2729844	6.75124022	8.13435375	4.736568398	8.75341847	12.8995718	10.079066
61	-78.0638886	61.4626174	267.375642	-85.925525	-48.6851724	-88.880834	-41.677146	20.9144736
62								
63								
64								
65	75.1800728	82.7153894	84.5533529	92.2801466	98.71060401	110.016729	114.682121	124.7125
66	84.5747964	-24.96852	-44.090969	-15.701664	-75.2192323	71.3463051	1.77853447	-12.666667
67								

	X	Y	Z	AA	AB	AC	AD	AE
35	INCA163-101	INCA163-103	INCA163-107	INCA163-110	INCA163-114	INCA163-119	INCA163-124	INCA163-127
36	Aigue	Lowell						
37	SAO199266	SAO42403	ANON107 ✓	SAO80493 ✓	ANON114 ✓	SAO61482? ✓	SAO61792 ✓	ANON127 ✓
38			1 221-49		BD+30.1835			BD-9.3055
39	8	8	8	8	9	9	9	10
40	26	27	32	51	12	22	56	19
41	19.792	33.88	57	8.971	34	51.454	15.591	50
42	-1	1	1	1	1	1	1	-1
43	37	49	71	20	30	39	32	10
44	33	29	0	25	0	11	40	17
45	48.64	3.94	5	14.93	4	49.23	43.04	5
46	1950	1950	1950	1950	1950	1950	1950	1950
47	1936.3	1930		1928.2		1930.1	1930.1	
48	8.9	8.4		8.4	9.5	8.5	9.9	10
49	8.6	8.6	10.3	9.2		10.3	9.7	11
50								
51	0.15	0.16		0.14		0.17	0.16	
52	0.21	0.16		0.14		0.17	0.16	
53								
54	126.582467	126.891167	128.2375	132.787379	138.141667	140.714392	149.064963	154.958333
55	-37.563511	49.4844278	71.0013889	20.4208139	30.0011111	39.1970083	32.6786222	-10.284722
56	0	0	0	0	0	0	0	0
57	5.8333E-05	4.4444E-05	0	3.8889E-05	0	4.7222E-05	4.4444E-05	0
58	-0.0019			-0.0032		-0.0035	-0.0015	
59	0.013			-0.007		-0.055	-0.004	
60	12.802502	13.2533254	17.1324118	13.4539101	14.7609997	12.8669477	10.8119571	6.45131889
61	173.319804	-65.076255	256.151822	-57.051183	-16.633471	254.098822	77.5513931	-32.43361
62								
63								
64								
65	127.051232	127.790018	129.504478	133.503266	138.141667	141.497025	149.064963	154.958333
66	-37.730313	49.3155962	70.8267051	20.2304668	30.0011111	38.9803702	32.6786222	-10.284722
67								

	AF	AG	AH	AI	AJ	AK	AL	AM
35	INCA163-135	INCA220-798	INCA220-826	INCA163-148	INCA220-894	INCA220-899	INCA163-156	INCA163-157
36	Lowell			Argue			Lowell	Lowell
37	ANON135?	INCA220-798	INCA220-826	SAO202795	CD-51.6275	INCA220-899	SAO62912	ANON157? L
38	BD 6.2336	1 221-61	CD-45.6843					BD+31.2348
39	10	11	11	11	11	12	12	12
40	38	0	14	44	59	6	12	12
41	25	15	38	5.091	1	13	27.882	7
42	1	-1	-1	-1	-1	-1	1	1
43	6	32	46	37	-51	40	33	30
44	22	27	8	52	41	6	32	39
45	4	45	27	19.45	44	27	2.12	20
46	1950	1950	1950	1950	1950	1950	1950	1950
47			1935.4			1930.1		
48		9.9	8.1	9.2		9.9	7.8	10.7
49		10.4	8.1	9.6	10		8.6	11.8
50								
51			0.15				0.16	
52			0.21				0.16	
53								
54	159.604167	165.0625	168.658333	176.021213	179.754167	181.554167	183.116175	183.779167
55	6.36777778	-32.4625	-46.140833	-37.872069	-51.695556	-40.1075	33.5339222	30.6555556
56	0	0	0	0	0	0	0	0
57	0	0	0	5.8333E-05	0	0	4.4444E-05	0
58				0.0007			0.0001	
59				0.008			0.017	
60	5.55354.656	13.3387448	17.8865494	6.00034488	12.5714107	11.301997	12.8803084	15.9622695
61	225.359986	-56.990445	-58.295763	-57.848932	201.039258	232.159828	63.5587972	-11.01249
62								
63								
64								
65	160.255265	165.0625	168.658333	176.647964	179.754167	181.554167	183.116175	183.779167
66	6.10633555	-32.4625	-46.140833	-38.149845	-51.695556	-40.1075	33.5339222	30.6555556
67								

	AN	AO	AP	AQ	AR	AS	AT	AU
35	INCA163-160	INCA163-167	INCA163-172	INCA163-182	INCA163-201	INCA163-203	INCA163-207	INCA163-210
36	Lowell	Argue	Argue	Argue	Lowell	Lowell	Lowell	Lowell
37	ANON160?	ANON167	SAO181097	ANON182	SAO83172	ANON203	SAO29105	SAO16441
38	AG 28.1239	AGK3 +2.1579		SAO157711		SAO120390		
39	12	12	12	13	14	14	14	14
40	19	26	44	3	4	16	18	35
41	22	49	32.492	4.592	41.543	8.945	38.336	8.655
42	1	1	-1	-1	1	1	1	1
43	28	2	-25	10	28	6	54	63
44	25	15	43	14	40	27	44	40
45	38	16	11.12	3.08	31.78	44.8	4.97	54.52
46	1950	1950	1950	1950	1950	1950	1950	1950
47			1933.4	1933.4	1902.5	1936.4	1947.3	1930.3
48	9.9	10.2	8.7	8.9	7	9	9	7.2
49	10.8	10.6	10.3	9.9	7.9	10.2	9.8	7.9
50								
51		0.16	0.16	0.14	0.17	0.14	0.17	
52		0.16	0.16	0.1	0.17	0.14	0.17	
53								
54	184.841667	186.704167	191.135383	195.769133	211.173096	214.037271	214.659733	218.786063
55	28.4272222	2.25444444	-25.719756	-10.234189	28.6754944	6.46244444	54.7347139	63.6818111
56		0	0	0	0	0	0	0
57	0	0	4.4444E-05	2.7778E-05	4.7222E-05	3.8889E-05	4.7222E-05	
58			-0.0002	-0.0017	-0.0057	-0.0025	0.0009	-0.0037
59			0.002	-0.01	-0.007	-0.005	-0.081	0.021
60	6.76921955	5.94276616	13.0981711	3.87615381	1.31235316	16.4067254	8.4977251	9.24731846
61	137.287988	138.514892	153.587488	33.5783589	222.891565	207.141957	32.9112464	199.552769
62								
63								
64								
65	185.468865	187.343568	191.802865	196.423912	211.734707	214.037271	215.076309	219.074784
66	28.1500027	1.97818791	-25.992543	-10.501622	28.4380488	6.46244444	54.5063389	63.4652823
67								

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	AV	AW	AX	AY	AZ	BA	BB	BC
35	INCA163-216?	INCA163-225	INCA163-228	INCA163-233	INCA163-239	INCA163-263		INCA220-1286
36	Argue?	Lowell,Argue	Lowell,Argue	Lowell,Argue	Lowell	Lowell		
37	CD-37.9770	ANON25	SAO183344?	SAO121210	SAO65401	SAO30405	AG 70.0607	INCA220-1286
38		BD-8.3919						CPD-64.03758
39	14	15	15	15	16	17	17	17
40	50	9	14	47	32	27	45	57
41	17.09	44	38.309	20.389	49.878	15.479	33	4
42	-1	-1	-1	1	1	1	1	-1
43	-37	9	24	2	38	50	70	64
44	37	4	17	39	5	12	28	55
45	35	26	40.54	6.78	53.5	10.83	1	18
46	1950	1950	1950	1950	1950	1950	1950	1950
47			1933.4	1936.4	1930.3	1947.4		
48		9.6	9.4	7.6	8.1	8.6	9.4	9.2
49		10.9	11.3	8	8.9	10.2		10.1
50								
51			0.16	0.17	0.16	0.14		
52			0.16	0.17	0.16	0.14		
53								
54	222.5712083	227.433333	228.659621	236.834954	248.207825	261.814496	269.266666667	
55	-37.6263889	-9.0738889	-24.294594	2.65188333	38.0981944	50.2030083	-64.921666667	
56	0		0	0	0	0	0	0
57	0	0	4.4444E-05	4.7222E-05	4.4444E-05	3.8889E-05	0	
58			-0.0011	-0.0001	-0.0002	-0.0021		
59			0.015	-0.01	-0.029	-0.018		
60	12.30415606	11.4360385	6.50620619	8.90046043	11.5167564	3.78518346	15.1712021997	
61	259.700049	212.354185	194.142856	141.4976	223.715969	151.915686	-34.63081412	
62								
63								
64								
65	222.5712083	228.107254	228.659621	237.465092	248.645908	261.814496	269.266666667	
66	-37.6263889	-9.2609663	-24.294594	2.5008971	37.9958497	50.2030083	-64.921666667	
67								

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	BD	BE	BF	BG	BH	BI	BJ	BK
35	INCA163-290?	INCA163-296		INCA163-303	INCA163-304?	INCA220-1427	INCA163-316	INCA163-334
36	Lowell,Argue	Lowell		Argue	Lowell		Lowell	Argue
37	SAO103677?	ANON296		SAO188093 ✓	ANON304? ✓	INCA220-1427 ✓	SAO09622 ✓	SAO163888 ✓
38		AGK28.1802			1 221-128	CD-49.13005		
39	18	18		19	19	20	20	20
40	21	29		21	27	5	4	4.5
41	48.123	57.9		55.206	44	18	23.295	24.344
42	1	1		-1	1	-1	1	-1
43	10	28		29	73	49	77	16
44	55	23		24	59	13	45	55
45	47.16	10		24.65	38	27	47.14	22.5
46	1950	1950		1950	1950	1950	1950	1950
47	1939.4			1895.5			1930.5	1933.6
48	7.8	11.3		6.1	11.1	9	8.4	8
49	8.1	12.7		7.2		9.8	9.8	8.5
50								
51	0.1			0.15			0.16	0.18
52	0.17			0.17			0.16	0.16
53								
54	275.4505125	277.49125		290.480025	291.9333333	301.325	301.0970625	311.351433
55	10.92976667	28.3861111		-29.406847	73.99388889	-49.22416667	77.76309444	-16.922917
56	0	0		0	0	0	0	0
57	4.72222E-05	0		4.7222E-05	0	0	4.44444E-05	4.4444E-05
58	-0.0012			0.0002			-0.0078	-0.0014
59	-0.007			-0.05			0.025	-0.057
60	13.14904298	14.45988805		4.87172224	9.10198053	15.572132934	9.586734267	13.8386193
61	6.622274571	235.884556		144.343815	-30.8978462	197.92019479	-80.1920922	112.153227
62								
63								
64								
65	276.0376209	277.49125		291.266975	291.6699919	301.325	300.6293768	311.351433
66	10.95762493	28.3861111		-29.307671	74.09726832	-49.22416667	77.90588984	-16.922917
67								

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	BL	BM	BN	BO	BP	BQ	BR	BS
15	INCA163-341?	INCA110-376		INCA163-368		INCA163-369		
36	Lowell,Argue	Argue		Lowell,Argue		Lowell		
37	ANON <sub>341</sub>			SAO146122		SAO90642		
38	SAO164452?	AGK 0.2713						
39	21	21	22			22		
40	28	33	27			34		
41	52.467	22.9	18.482			20.921		
42	-1	1	-1			1		
43	12	0						
44	9	27						
45	30.98	11	30.43			10.12		
46	1950	1950	1950			1950		
47	1933.6		1933.6			1927.9		
48	8.5					8.6		
49	9	10.9	9.4			8.6		
50						9.4		
51	0.18		0.16			0.16		
52	0.16		0.16			0.16		
53						0.14		
54	322.2186125		0 336.827008			0 338.587171		
55	-12.1586056		0 -8.6751194			0 28.3361444		
56	0		0 0			0 0		
57	4.4444E-05		0 4.4444E-05			0 3.8889E-05		
58	0.0013		-0.0048			-0.0028		
59	-0.029		-0.013			-0.06		
60	10.82389823	13657.5746	8.74367788	12847.215497		7.98968211	16191.12411	
61	-0.47391244	262.029567	26.9988699	-73.91506975		31.7961352	-80.7638189	
62								
63								
64								
65	322.8953905	26.0044554	337.483908	25.33805816		339.173453	26.00445541	
66	-11.9376106	10.7146498	-8.4186069	10.465963617		28.5957934	10.71464976	
67								

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	BT	BU	BV	BW	BX	BY	BZ	CA
35	INCA163-389	INCA163-388	INCA220-1654	INCA220-1706	INCA163-414			INCA163-149 INCA163-190
36	Lowell	Argue			Lowell			
37	SAO127859 ✓	SAO191517 ✓	INCA220-1654 ✓	INCA220-1706	SAO53490			SAO43932 SAO63577
38		CPD-69.03299	CD-48.14514					
39	22	22	23	23				
40	54	54	0	25	53			
41	45.034	26.58	48	48	21.982		17.504	35.29
42	1	-1	-1	-1	1		1	1
43	7	28	-68	47	49		49	30
44	20	1	37	43	37		40	47
45	46.54	37.81	2	29	18.4		27.45	57.5
46	1950	1950	1950	1950			1950	1950
47	1936.5	1933.6			1929.7		1947.2	1930.2
48	8.9	9.2	8.7		8.8		9.2	9
49	10.1	9.8	9.8	10.4	9.7		10.9	10.4
50								
51	0.17	0.16			0.16		0.14	0.17
52	0.17	0.16			0.16		0.14	0.17
53							0.5	0.5
54	343.687642	343.61075	345.2	351.45	358.341592		177.572933	202.147042
55	7.34626111	-28.027169	-68.6172222	-47.7247222	49.6217778		49.6742917	30.7993056
56	0	0	0	0	0		0	0
57	4.7222E-05	4.4444E-05	0	0	4.4444E-05		3.8888E-05	4.7222E-05
58	-0.0007	-0.0028					-0.0013	-0.0021
59	-0.096	-0.013					-0.003	-0.006
60	6.3789802	17.7606482	13.37727442	8.390414754	8.13994512	0	8.86093843	3.66781636
61	182.067566	-43.870948	172.0901308	-66.3473851	61.660875	#DIV/0!	213.712362	-57.462798
62								
63								
64								
65	344.318229	344.292141	345.2	352.1341584	358.974548		177.572933	202.724699
66	7.61382788	-27.759672	-68.6172222	-47.449228	49.9000469		49.6742917	30.5420287
67								

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	CB	CC	CD	CE	CF	CG	CH	CI
35	INCA163-244	INCA163-246	INCA163-360		INCA56-16	INCA56-18	INCA56-26	INCA56-30
36	Lowell	xLowell			Argue	/	/	Argue
37	SAO65473	BD 39.3030	INCA163-360		SAO147712	SAO167194	CD-23.1007	AGK3-1.0339
38								
39	16	16	22		1	1	2	3
40	38	41	0		14	36	37	36
41	22.308	10	55.584		39.219	11.5	15	22
42	1	1	1		-1	-1	-1	-1
43	39	39	31		11	24	23	1
44	51	43	37		42	42	18	41
45	18.08	16	22.7		48.11	3	37	14
46	1950	1950	1950		1950	1950	1950	1950
47	1930.3		1929.7		1933.7	1982	1982	
48	9.4	9.5	8.8		9			7.5
49	11.7		9.6		9.6	9.6	10.7	8
50								
51	0.19		0.16		0.18			
52	0.19		0.16		0.16			
53	0.5		0.5		0.2			
54	249.59295	250.291667	330.2316	0	18.6634125	24.0479167	39.3125	54.0916667
55	39.8550222	39.7211111	31.6229722	0	-11.713364	-24.700833	-23.310278	-1.6872222
56	0	0	0		0	0	0	0
57	5.2778E-05	0	4.4444E-05	0	4.4444E-05	0	0	0
58	0.0014		0.0036					
59	0.013		0.034					
60	5.11049265	11.0130583	6.40416592	21600	16.5418415	13.0069275	9.3449299	17.652613
61	256.057769	187.298392	-11.431668	90	56.0056791	71.7967171	-67.90561	-31.301564
62								
63								
64								
65	250.015904	250.714685	330.787486	360	19.2855242	24.6361116	39.8771123	54.7259789
66	39.7589299	39.6282117	31.8652548	0	-11.450143	-24.447232	-23.095793	-1.5252256
67								

## HIP-EGO.Data

	CJ	CK	CL	CM	CN	CQ	CP	CQ
35	INCA56-39	INCA56-55	INCA56-62	INCA56-77	INCA56-84	INCA56-107	INCA56-143	INCA56-164
36	Argue		Argue	Argue	Argue	Argue	Argue	Argue
37	BD-0.0759	SAO249959	SAO154848	✓ BD-14.3331 ✓	BD+0.2845	AGK3+5.2203	SAO164774	SAO165890
38								
39	4	7	8	11	11	16	21	23
40	40	45	59	26	47	55	55	45
41	44	52.8552	18	40.6	28	45	28.8	34.8
42	-1	-1	-1	-1	1	1	-1	-1
43	0	67	14	14	0	5	15	16
44	29	18	13	31	1	14	19	58
45	58	28.75	41	16	19	30	48	34
46	1950	1950	1950	1950	1950	1950	1950	1950
47	1899	1982	1982	1982	1982	1982	1982	1982
48		7.9	9	9.7	10.7	10.7	8.9	7.5
49	10.9	7.9	10	11	11.3	11.3	10	8
50	0.1							
51		0.19						
52	1	0.19						
53	1	0.5						
54	70.1833333	116.470217	134.825	171.669167	176.866667	253.9375	328.87	356.395
55	-0.4994444	-67.307986	-14.228056	-14.521111	0.02194444	5.24166667	-15.33	-16.976111
56	0.00041667	0	0	0	0	0	0	0
57	0.00027778	5.2778E-05	0	0	0	0	0	0
58		0.0004						
59		0.007						
60	11.7300219	14.5554504	13.4501839	13.4259853	13.5570043	7.37143971	4.50375199	10.8277734
61	124.648132	88.0166711	221.955845	-82.930826	-50.957482	223.933758	162.612586	170.948835
62								
63								
64								
65	70.8219181	116.513283	135.415498	172.299673	177.507298	254.553761	329.549399	357.040482
66	-0.4065427	-67.432149	-14.425288	-14.796737	-0.2560656	5.16609189	-15.090888	-16.698222
67								

	A	B	C	D	E	F	G
68	HIP*2	INCA163-3		INCA163-12			INCA220-91
69	Speckle OK?	Lowell	Lowell				
70	HIP * 2	SAO74560	SAO37358				HD11564
71	Other Name						CD-34.721
72	hr	1	1	1			1
73	min	10	33				48
74	sec	11.432	47.143				24
75	dec sign	1	1	1			-1
76	deg	22	47				-33
77	arcmin	34	49				56
78	arcsec	26.08	29.3				0
79	equinox	1950	1950				1900
80	epoch	1927.9	1929.8				
81	V magnitude	8.5	9				10
82	b magnitude	8.2	10.2				10.7
83	RAerr(s)						
84	RA err(")	0.14	0.16				120
85	DEC err("")	0.14	0.16				60
86	V err(m)						
87	RA (deg)	17.5476333	0	23.4464292	0	0	27.1
88	DEC (deg)	22.5739111	0	47.8248056	0	0	-33.9333333
89	RAerr(deg)						
90	DECerr(deg)	3.8889E-05	0	4.444E-05	0	0	0.01666667
91	mu ra (s/yr)	-0.0011		0.0096			
92	mu dec ("/yr)	-0.024		-0.017			
93	Sep (E-*) (')	12.827865	675.992948	13.3753179	1349.35948	1212.22006	16.6023056
94	PA (E of N)	62.7084385	42.211568	-5.6049292	176.509095	1.80959754	194.360181
95	Date1						
96	Date2						
97	HIP pressure						
98		17.5476333	26.0044554	24.2117722	25.3380582	26.0044554	27.6549408
99		22.5739111	10.7146498	48.0794235	10.4659636	10.7146498	-33.686163
100							

	H	I	J	K	L	M	N	O
68		INCA220-102				INCA163-44	INCA163-49	INCA48-184
69						Argue	Lowell	
70		INCA220-102				SAO194728	ANON49	
71	1	221-17	2			INCA220-244	BD-12.804	SAO111879
72			3				4	4
73							2	5
74		22				8.017	45	25
75		-1				-1	-1	1
76		76				-36	12	5
77		25				14	17	18
78		57				49.78	1	15
79		1950				1950	1950	1950
80						1936		
81		9.8				10	9.8	
82						10.2	11.3	6.8
83								
84						0.15		
85						0.21		
86								
87	0	30.84166667	0	0		60.5334042	61.4375	67.3541667
88	0	-76.4325	0	0		-36.247161	-12.283611	5.30416667
89						0		
90	0	0	0	0		5.8333E-05	0	0
91						-0.003		
92						-0.017		
93	3841.26325	13.00784009	3166.92569	5291.090551		1.97003288	5.01436138	16.8924022
94	180.800493	29.00258602	187.636457	-3.35525017		146.420699	59.5174672	-78.942435
95								
96								
97								
98	26.0044554	30.84166667	25.3380582	25.33805816		60.9964294	61.4375	67.3541667
99	10.7146498	-76.4325	10.4659636	10.46596362		-36.111218	-12.283611	5.30416667
100								

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P	Q	R	S	T	U	V	W
68	INCA110-641	INCA220-409	INCA163-76		INCA163-84		
69	Argue	Argue			Lowell		
70	CD-25.2485	INCA220-409	BD-15.1291		ANON84		
71		-44.02152	HD42460		BD71.394		
72	5	5	6		7		
73	28	36	7		15		
74	23.2	44	59		46		
75	-1	-1	-1		1		
76	25	44	15		71		
77	10	7	52		14		
78	1	2	53		31		
79	1950	1950	1950		1950		
80							
81	10		9.2		9.3		
82	10.8	9.6	10.4				
83							
84							
85							
86							
87	0	82.09666667	84.18333333	91.99583333	108.941667		
88	0	-25.166944	-44.117222	-15.881389	71.2419444		
89	0	0					
90	0	0	0	0	0		
91							
92							
93	4529.42011	6.05242024	7.85085492	13.5241159	12.4001785		
94	183.777395	136.652577	267.883768	144.002047	191.180634		
95							
96							
97							
98	26.0044554	82.6078145	84.5555244	92.5573349	110.352153		
99	10.7146498	-25.129901	-44.089913	-15.892446	71.1483561		
100							

Note  
Dupl. wt

	X	Y	Z	AA	AB	AC	AD	AE
68	INCA163-102	INCA163-105				INCA163-120		
69	Lowell					Lowell		
70	CD-36.1675	SAO 42421				SAO61491		
71								
72	8	8				9		
73	26	29				23		
74	56	39.309				32.714		
75	-1	1				1		
76	37	49				39		
77	11	26				7		
78	32	7.74				39.63		
79	1950	1950				1950		
80		1930				1930.1		
81		8				8.8		
82	9.5	8.1				9.9		
83								
84	0.16					0.16		
85	0.16					0.16		
86								
87	126.733333	127.413788	0	0		140.886308	0	0
88	-37.192222	49.4354833	0	0		39.127675	0	0
89								
90	0	4.4444E-05	0	0		4.4444E-05	0	0
91		-0.0014				-0.0077		
92		-0.026				0.005		
93	13.7204813	10.6641805	5086.01149	6287.21069		9.19310253	6929.66141	7817.52071
94	42.7110871	73.1991566	209.57518	264.693302		209.712472	257.965519	-80.72059
95								
96								
97								
98	127.204726	128.310384	26.0044554	26.0044554		141.668064	25.3380582	25.3380582
99	-37.359615	49.2646446	10.7146498	10.7146498		38.9105147	10.4659636	10.4659636
100								

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	AF	AG	AH	AI	AJ	AK	AL	AM
68	INCA163-133	INCA220-800		INCA220-876	INCA220-895	INCA220-902		
69	Lowell Argue		Argue					
70	ANON133?	INCA220-800		CD-37.07473	INCA220-895	INCA220-902		
71	AGK 6.1340	CD-31.08735			CD-51.06276	1 221-79		
72	10	11		11	11	12		
73	37	1		43	59	7		
74	37	43		36	6	50		
75	1	-1		-1	-1	-1		
76	6	32		37	51	40		
77	27	19		52	31	8		
78	52	6		3	43	15		
79	1950	1950		1950	1950	1950		
80								
81	10.2	9		8.8	7.9	10.2		
82	10.9	10		10.1	9			
83								
84								
85								
86								
87	159.404167	165.429167	0	175.9	179.775	181.958333	0	0
88	6.46444444	-32.318333	0	-37.8675	-51.528611	-40.1375	0	0
89	0							
90	0	0	0	0	0	0	0	0
91								
92								
93	15.9817169	17.8180869	7934.24621	12.6858787	5.03562026	14.0677885	8744.47528	8912.91323
94	-83.107603	24.7917201	-60.24009	-72.216058	245.316231	132.135625	260.088532	261.706685
95								
96								
97								
98	160.05553	165.429167	25.3380582	176.526293	179.775	181.958333	25.3380582	25.3380582
99	6.20333702	-32.318333	10.4659636	-38.145238	-51.528611	-40.1375	10.4659636	10.4659636
100								

## HIP-EGO.Data

AN	AO	AP	AQ	AR	AS	AT	AU
6 8		INCA163-170	INCA163-184	INCA163-200	INCA163-204		
6 9		Argue?	Argue?	Lowell	Lowell		
7 0		CD-25.9428	SAO157724	ANON200	ANON204		
7 1				BD 29.2491	BD 7.2769		
7 2		12	13	14	14		
7 3		44	3	4	4		
7 4		1.203	52.588	26	0		
7 5		-1	-1	1	1		
7 6		-25	-10	28	6		
7 7		32	11	43	36		
7 8		33.205	41.76	19	29		
7 9		1950	1950	1950	1950		
8 0			1933.4				
8 1				9.1	10.7	9.6	
8 2			10.6	9.7	11.7		
8 3							
8 4			0.16				
8 5			0.16				
8 6							
8 7		0 191.005013	195.969117	211.108333	214.25		
8 8		0 -25.542557	-10.194933	28.7219444	6.60805556		
8 9							
9 0	0	0	4.4444E-05	0	0		
9 1			-0.0113				
9 2			-0.003				
9 3		9687.25575	1.71540571	15.14016	4.94204042	7.84336464	
9 4		-86.923534	228.342202	68.1196112	-67.155174	138.476445	
9 5							
9 6							
9 7							
9 8		26.0044554	191.671984	196.62401	211.669939	214.25	
9 9		10.7146498	-25.81547	-10.462095	28.4843348	6.60805556	
10 0							

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	AV	AW	AX	AY	AZ	BA	BB	BC
68	INCA163-217		INCA163-231		INCA163-240	INCA163-262	INCA163-279	INCA220-1289
69	Argue ?		Argue		Lowell			
70	CD-37.9771		SAO183357		SAO65407	ANON262	SAO 8937	INCA220-1289
71						BD 50.2407		CPD-65.03573
72	14		15		16	17	17	17
73	50		15		33	25	50	58
74	21.19		39.536		24.668	57	42	26
75	-1		-1		1	1	1	-1
76	-37		24		38	50	70	-65
77	36		4		10	19	9	5
78	28.8		0.86		45.1	26	14	43
79	1950		1950		1950	1950	1950	1950
80			1933.4		1930.3			
81			8.3		8.9	9.2	9	8.4
82			10.9		9.5	10.3		8.3
83								
84			0.16		0.17			
85			0.16		0.17			
86								
87	222.5882917		228.914733	0	248.352783	261.4875	267.675	269.60833333
88	-37.608		-24.066906	0	38.1791944	50.3238889	70.1538889	-65.09527778
89			0			0		
90	0		4.4444E-05	0	4.7222E-05	0	0	0
91			-0.0013		-0.0005			
92			-0.074		-0.029			
93	12.73442889		14.3926531	12684.7569	3.66424139	11.4508468	14.553195	2.06666666664
94	264.4537074		59.2802465	-87.803743	198.643061	-70.016436	72.1282203	-6.992963E-09
95								
96								
97			228.914733	26.0044554	248.790071	261.4875	267.545381	269.60833333
98	222.5882917		-24.066906	10.71464998	38.0775031	50.3238889	70.1422822	-65.09527778
99	-37.608							
100								

	<b>BD</b>	<b>BE</b>	<b>BF</b>	<b>BG</b>	<b>BH</b>	<b>BI</b>	<b>BJ</b>	<b>BK</b>
6 8	INCA163-287		INCA220-1335	INCA56-122	INCA163-305?			INCA163-321
6 9	Lowell			Argue?	Lowell			Lowell
7 0	ANON287		INCA220-1335?	CD-29.16102	ANON305?			SAO9657
7 1	BD 10.3494		CPD-55.09029		1 221-129			
7 2	18		19	19	19		20	
7 3	21		12	21	27		9	
7 4	28		25	51	59		44.642	
7 5	1		-1	-1	1		1	
7 6	10		55	29	73		77	
7 7	40		4	11	47		40	
7 8	50		17	51	31		36.59	
7 9	1950		1950	1950	1950		1950	
8 0						1889.9		
8 1	9.3		8.1	11.1			7.8	
8 2			8.3	11.2	10.3		7.5	
8 3								
8 4						0.14		
8 5						0.15		
8 6								
8 7	275.36666667	0	288.1041667	290.4625	291.9958333	302.4360083	0	
8 8	10.68055556	0	-55.0713889	-29.1975	73.7919444	77.67683056	0	
8 9	0							
9 0	0	0	0	0	0	4.16667E-05	0	
9 1						0.0053		
9 2						-0.022		
9 3	3.86158706	14235.5188	4.57733265	8.82453525	7.815398037	17.14960784	16855.6481	
9 4	240.2618018	265.345164	199.4134266	12.1939684	218.6897134	112.5601867	-84.300224	
9 5								
9 6								
9 7								
9 8	275.9550171	25.3380582	288.1041667	291.24822	291.7448207	301.9919185	25.3380582	
9 9	10.70801151	10.4659636	-55.0713889	-29.098406	73.89563344	77.82521848	10.4659636	
10 0								

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	BL	BM	BN	BO	BP	BQ	BR	BS
68		INCA163-359	INCA56-148	INCA220-1625	INCA163-370	INCA220-1641	INCA163-381?	
69	Lowell			Lowell	Argue		Lowell	
70	ANON359	BD-9.5989	INCA220-1625	SAO90650	INCA220-1641	ANON381?		
71	SAO51584		CD-49.13899		CD-33.16236	BD 15.4725		
72	22	22		22		22		
73	0	27	31	34	46		22	
74	21.621	58	57	44.376	25		51	
75	1	-1	-1	1	-1		19	
76	42	8	-48	28	33		1	
77	11	57	48	7	0		16	
78	0.09	38	59	2.16	55		32	
79	1950	1950	1950	1950	1950		1950	
80	1929.7			27.8				
81	8.6	9.6	9.8	8.6	8.8		10.3	
82	9	10.3	10.7	9	9.4		11	
83								
84	0.16			0.14				
85	0.16			0.14				
86								
87	0	330.090088	336.991667	337.9875	338.6849	341.6041667	342.8291667	
88	0	42.1833583	-8.9605556	-48.81638889	28.1172667	-33.0152778	16.02555556	
89								
90	0	4.444E-05	0	0	3.8889E-05	0	0	
91		0.0035			0.0004			
92		-0.021			-0.01			
93	17898.80681	9.65747817	16.6855081	3.8811403299	11.8604592	11.95739465	9.006235817	
94	-88.0757876	-20.608613	124.092054	-43.27202039	123.956846	142.4575512	-16.4520639	
95								
96								
97								
98	26.00445541	330.605424	337.649002	337.9875	339.271915	342.3005766	343.4464318	
99	10.71464976	42.4252531	-8.7037331	-48.81638889	28.377087	-32.7506271	16.29193361	
100								

## HIP-EGO.Data

	BT	BU	BV	BW	BX	BY	BZ	CA
68	INCA163-385	INCA163-390	INCA220-1659	INCA220-1712				INCA163-191
69	Lowell							
70	ANON385	SAO191527	INCA220-1659	SAO231636				SAO63578
71	BD 6.5087		CPD-68.03555	CD-48.14524				
72	22	22	23	23				13
73	53	54	1	27				28
74	47	59.114	33	45				38.59
75	1	-1	-1	-1				1
76	7	28	-68	47				30
77	28	14	10	50				56
78	16	2.04	24	47				55.6
79	1950	1950	1950	1950				1950
80		1933.6						1930.2
81	9.5	7.7	9.4	8.8				9
82		8.3	10	10.2				9.9
83								
84		0.16						0.16
85		0.16						0.16
86								0.5
87	343.445833	343.746308	345.3875	351.9375	0		0	202.160792
88	7.47111111	-28.2339	-68.1733333	-47.8463889	0		0	30.9487778
89								
90	0	4.4444E-05	0	0	0		0	4.4444E-05
91		0.0039						
92		0.001						
93	14.7337733	5.46844919	16.62338638	15.08850205	16206.5853	0	7714.49857	11.2445514
94	-85.712298	-85.417445	24.08687772	108.0983301	259.670487	#DIV/0!	248.20281	-12.383718
95								
96								
97								
98	344.0761	344.427717	345.3875	352.619272	26.0044554		25.3380582	202.738038
99	7.73835154	-27.966221	-68.1733333	-47.5705673	10.7146498		10.4659636	30.6915261
100								

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	CB	CC	CD	CE	CF	CG	CH	CI
68		INCA163.247					INCA56-27	
69		xLowell						
70		AGK 60.1540					SAO167968	
71								
72		16					2	
73		41					38	
74		57					33.069	
75		1					-1	
76		40					23	
77		0					10	
78		37					10.18	
79		1950					1950	
80							1933.8	
81		9.8					9.2	
82							9.8	
83								
84							0.16	
85							0.16	
86							0.5	
87	0	250.4875	0	0	0	0	39.6377875	0
88	0	40.0102778	0	0	0	0	-23.169494	0
89								
90	0	0	0	0	0	0	4.444E-05	0
91							0.0024	
92							-0.007	
93	11916.6778	10.7438563	16910.8439	21600	1401.33208	2115.74553	15.3437202	1887.25019
94	260.421714	49.2166278	265.357362	90	16.9685175	2.35838344	37.9638229	-66.59636
95								
96								
97								
98	26.0044554	250.908007	26.0044554	360	26.0044554	26.0044554	40.2023962	26.0044554
99	10.7146498	39.91827	10.7146498	0	10.7146498	10.7146498	-22.95602	10.7146498
100								

## HIP-EGO.Data

	CJ	CK	CL	CM	CN	CO	CP	CQ
68		INCA56-61	INCA56-76	INCA110-280	INCA56-108	INCA56-142		
69		Argue	Argue	Argue ?	Argue	Argue		
70		SAO154846	BD-13.3381	AGO 0.1515	BD+5.3294	SAO164787		
71								
72		8	11	11	11	16	21	
73		59	28	48	55	55	56	
74		11.931	2.1	22.3	4	24.344		
75		-1	-1	1	1	-1		
76		14	14	0	5	15		
77		17	24	1	21	22		
78		37.93	48	11.4	3	59.82		
79		1950	1950	1950	1950	1950		
80		1933.1	1982	1982		1933.6		
81		8.4		10.5		9		
82		8.4	10.8	11.4	11.1	10.2		
83								
84		0.18				0.18		
85		0.16				0.16		
86		0.5				0.5		
87	0	0	134.799713	172.00875	177.092917	253.766667	329.101433	0
88	0	0	-14.293869	-14.413333	0.01983333	5.35083333	-15.383283	0
89								
90	0	0	4.4444E-05	0	0	0	4.4444E-05	0
91			-0.0006				0.0002	
92			-0.017				0.006	
93	2759.61467	5757.25559	17.5433305	10.396901	8.94416517	15.4293949	16.7609692	19514.6875
94	-76.149832	-23.806129	216.91859	38.3032149	19.9063677	-85.554141	116.829642	-85.094839
95								
96								
97								
98	26.0044554	26.0044554	135.389948	172.639759	177.73355	254.382436	329.78071	26.0044554
99	10.7146498	10.7146498	-14.491015	-14.689185	-0.2582285	5.274459	-15.143598	10.7146498
100								

	AV	AW	AX	AY	AZ	BA	BB	BC
101	INCA220-1146				INCA163-241			INCA220-1295
102					Lowell			
103	INCA220-1146				SAO65424			HD164392
104	221-101							
105	14					16		17
106	51					34		55
107	8					12.218		42
108	-1					1		-1
109	-37					38		-65
110	25					4		10
111	12					5.3		0
112	1950					1950		1900
113						1930.3		
114	10.5					8.5		8.55
115						9		9.8
116								
117						0.16		120
118						0.16		60
119								
120	222.7833333	0		0	248.550908	0		268.925
121	-37.42	0		0	38.0681389	0		-65.166666667
122	0	0		0	0	0		0
123	0	0		0	4.4444E-05			0.01666666667
124						-0.0024		
125						-0.02		
126	10.38186753	12038.5153		12678.1781	12.9713053		6078.8432	14.2954449
127	-11.2230806	-84.332457		-87.803743	140.676034		234.117433	99.4575354535
128								
129								
130								
131	222.7833333	26.0044554		26.0044554	248.988729		26.0044554	270.16715019
132	-37.42	10.7146498		10.7146498	37.9673453		10.7146498	-65.168871866
133								

	A	B	C	D	E	F	G
101	HIP*3						INCA220-92
102	Speckle OK?						
103	HIP * 3						INCA220-92
104	Other Name						CD-33.00652
105	hr						1
106	min						50
107	sec						50
108	dec sign						-1
109	deg						33
110	arcmin						33
111	arcsec						26
112	equinox						1950
113	epoch						
114	V magnitude						8.2
115	b magnitude						8.7
116	RA err(s)						
117	RAerr()						
118	DEC err()						
119	V err(m)						
120	RA (deg)	0	0	0	0	0	27.7083333
121	DEC (deg)	0	0	0	0	0	-33.557222
122	RAerr(deg)	0	0	0	0	0	0
123	DECerr(deg)	0	0	0	0	0	0
124	mu ra (s/yr)						
125	mu dec ("/yr)						
126	Sep (E*) (')	846.008936	675.862274	2229.73253	1348.88173	1212.2117	8.37113084
127	PA (E of N)	148.42697	42.211568	178.178681	176.509095	1.80959754	189.758836
128	Date1						
129	Date2						
130	HIP pressure						
131		25.3380582	26.0044554	25.3380582	26.0044554	27.7083333	
132		10.4659636	10.7146498	10.7146498	10.4659636	10.7146498	-33.557222
133							

ORIGINAL PAGE IS  
OF POOR QUALITY

	H	I	J	K	L	M	N	O
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111								
112								
113								
114								
115								
116								
117								
118								
119								
120	0	0	0	0	0	0	0	0
121	0	0	0	0	0	0	0	0
122	0	0	0	0	0	0	0	0
123	0	0	0	0	0	0	0	0
124								
125								
126	3840.2168	5222.936593	3135.29856	5259.990931			2515.86266	
127	180.800493	-0.78918805	187.636457	-3.35525017			-57.074396	
128								
129								
130								
131	26.0044554	25.33805816	25.3380582	25.33805816			25.3380582	
132	10.7146498	10.46596362	10.4659636	10.46596362			10.4659636	
133								

	P	Q	R	S	T	U	V	W
101			INCA220-414 ?					
102			?Argue?					
103			INCA220-414 ?					
104								
105			5					
106			37					
107			35					
108			-1					
109			44					
110			44					
111			8					
112			12					
113			1950					
114			10					
115			11.2					
116								
117								
118								
119								
120	0	0	84.3958333	0	0	0	0	
121	0	0	-44.136667	0	0	0	0	
122	0	0	0	0	0	0	0	
123	0	0	0	0	0	0	0	
124								
125								
126	4438.84024	3747.94594	2.89833609	4150.84812	5277.776886	3982.65454	5355.00366	
127	183.777395	-55.062641	120.569167	-67.543381	-12.1703247	204.021482	-84.150045	
128								
129								
130								
131	26.0044554	26.0044554	84.7677408	26.0044554	26.00445541	26.0044554	26.0044554	
132	10.7146498	10.7146498	-44.110384	10.7146498	10.71464976	10.7146498	10.7146498	
133								

ORIGINAL PAGE IS  
OF POOR QUALITY

	X	Y	Z	AA	AB	AC	AD	AE
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111								
112								
113								
114								
115								
116								
117								
118								
119								
120	0	0	0	0	0	0	0	0
121	0	0	0	0	0	0	0	0
122	0	0	0	0	0	0	0	0
123	0	0	0	0	0	0	0	0
124								
125								
126	5611.151	4619.96916	4151.76194	6094.17185	5992.42657	5656.02892	6380.94408	7754.99253
127	-58.952031	239.993024	209.57518	264.693302	258.85818	252.51415	257.965519	-80.72059
128								
129								
130								
131	26.0044554	26.0044554	26.0044554	26.0044554	25.3380582	26.0044554	25.3380582	25.3380582
132	10.7146498	10.7146498	10.7146498	10.7146498	10.4659636	10.7146498	10.4659636	10.4659636
133								

	AN	AO	AP	AQ	AR	AS	AT	AU
101				INCA110-727	INCA163-202			
102				Argue	Lowell			
103				BD-9.3615	ANON202			
104					BD29.2497			
105				13	14			
106				2	5			
107				50	35			
108				-1	1			
109				-10	28			
110				3	46			
111				27	56			
112				1950	1950			
113								
114				9.7	9.5			
115								
116								
117								
118								
119								
120	0	0	0	195.708333	211.395833	0	0	0
121	0	0	0	-10.0575	28.782222	0	0	0
122	0	0	0	0	0	0	0	0
123	0	0	0	0	0	0	0	0
124								
125								
126	8490.31649	9684.15701	9214.87394	13.9026289	12.1192768	11254.2442	6051.05002	
127	262.888579	-86.923534	-76.247087	-6.0279735	63.1375327	-88.851328	238.365674	
128								
129								
130								
131	26.0044554	26.0044554	196.362815	211.95659	25.3380582	26.0044554		
132	10.7146498	10.7146498	10.7146498	-10.325015	28.545342	10.4659636	10.7146498	
133								

	<b>BD</b>	<b>BE</b>	<b>BF</b>	<b>BG</b>	<b>BH</b>	<b>BI</b>	<b>BJ</b>	<b>BK</b>
101	INCA163-289		INCA220-1334			INCA220-1430		INCA163-333
102	Argue double							Argue
103	SAO103673		HD179646			HD190857		BD-17.6085
104								
105	18		19			20		20
106	21		8			1		44
107	38.002		12			48		45
108	1		-1			-1		-1
109	10		54			49		-16
110	31		51			13		55
111	23.52		0			0		0
112	1950		1900			1900		1950
113	1939.4							
114	8		11.1			10.1		9.8
115	9.5		11.3			11.6		11
116								
117	0.17		120			120		
118	0.17		60			60		
119								
120	275.4083417	0	287.05	0		300.45		311.1875
121	10.5232	0	-54.85	0		-49.216666667		-16.916667
122	0	0	0	0		0		0
123	4.72222E-05	0	0.016666667	0		0.016666667		
124	-0.0012							
125	-0.033							
126	11.37640047	13349.1119	14.43457964	14090.1662		6.5874366565		5.91909945
127	184.2834458	265.345164	-10.9530051	-80.203711		208.52067893		311.1875
128								144.910502
129								
130								
131	275.9974828	25.3380582	288.0669686	26.0044554		301.366679822		
132	10.55085933	10.4659636	-54.7660284	10.7146498		-49.07368918		-16.916667
133								

	BL	BM	BN	BO	BP	BQ	BR	BS
101							INCA220-1643	INCA163-382?
102							Lowell	
103							INCA220-1643	SAO108243?
104							CD-33.16240	
105							22	22
106							46	51
107							41	55.309
108							-1	1
109							-32	15
110							49	43
111							26	51.68
112							1950	1950
113								1939.9
114								9.5
115								9.2
116								9.7
117								10.6
118								
119								
120	0	0	0	0	0	0	341.6708333	342.9804542
121	0	0	0	0	0	0	-32.8238889	15.73102222
122	0	0	0	0	0	0	0	0
123	0	0	0	0	0	0	0	4.722222E-05
124								0.0011
125								-0.017
126	17470.41034	17898.14271	13657.5746	18513.2883	12847.215497	16545.9863	10.64133003	10.96416307
127	-85.5024786	-88.0757876	262.029567	-86.420692	-73.91506975	266.305804	77.40078431	145.5007667
128								
129								
130								
131	26.00445541	26.00445541	26.0044554	25.33805816	26.0044554	342.3666389	343.5983688	
132	10.71464976	10.71464976	10.7146498	10.465963617	10.7146498	-32.5591385	15.99761299	
133								

ORIGINAL PAGE IS  
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	BT	BU	BV	BW	BX	BY	BZ	CA
101			INCA220-1657					INCA163-151
102								
103			INCA220-1657					
104			CPD-69.03300					
105				23				
106				1				
107				22				
108				-1				
109				-68				
110				38				
111				56				
112				1950				
113								1950
114					9.2			
115					10.2			
116						11.3		
117								
118								
119								
120	0	0	345.3416667		0		177.754167	0
121	0	0	-68.6488889		0		49.8794444	0
122	0	0	0		0		0	0
123	0	0	0		0		0	0
124								
125								
126	18926.8014	17037.2745	15.9445319		13090.5872		0	5.36672253
127	-89.456076	-82.169315	161.8361645		259.670487	#DIV/0!		9215.12704
128								23.0480638
129								262.59497
130								
131	26.0044554	26.0044554	345.3416667		26.0044554			177.754167
132	10.7146498	10.7146498	-68.6488889		10.7146498			26.0044554
133								49.8794444
								10.7146498

	CB	CC	CD	CE	CF	CG	CH	CI
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111								
112								
113								
114								
115								
116								
117								
118								
119								
120	0	0	0	0	0	0	0	0
121	0	0	0	0	0	0	0	0
122	0	0	0	0	0	0	0	0
123	0	0	0	0	0	0	0	0
124								
125								
126	10480.4086	10504.3999	15601.0466	21600	1400.08877	2115.56808	2174.54119	1886.86809
127	260.421714	260.433566	265.357362	90	16.9685175	2.35838344	-20.85006	-66.59636
128								
129								
130								
131	26.0044554	26.0044554	26.0044554	360	26.0044554	26.0044554	26.0044554	26.0044554
132	10.7146498	10.7146498	10.7146498	0	10.7146498	10.7146498	10.7146498	10.7146498
133								

ORIGINAL PAGE IS  
OF POOR QUALITY

	CJ	CK	CL	CM	CN	CO	CP	CQ
101						INCA56-109		
102						Argue		
103						1 221-113		
104							16	
105							56	
106								11
107								1
108								5
109								7
110								31
111								1950
112								
113								
114								
115							11	
116								
117								
118								
119								
120	0	0	0	0	0	254.045833	0	0
121	0	0	0	0	0	5.12527778	0	0
122	0	0	0	0	0	0	0	0
123	0	0	0	0	0	0	0	0
124								
125								
126	2759.59738	5125.39856	6545.24469	8635.90575	9124.87478	12.3398974	17656.8231	19110.5487
127	-76.149832	-23.806129	-76.765996	-79.77945	-85.809488	173.531698	-84.983254	-85.094839
128								
129								
130								
131	26.0044554	26.0044554	26.0044554	26.0044554	254.662629	26.0044554	26.0044554	26.0044554
132	10.7146498	10.7146498	10.7146498	10.7146498	5.05021091	10.7146498	10.7146498	10.7146498
133								

## HIP-EGO.Data

	A	B	C	D	E	F	G
134	HIP*4						
135	Speckle OK?						
136	HIP * 4						
137	Other Name						
138	hr						
139	min						
140	sec						
141	dec sign						
142	deg						
143	arcmin						
144	arcsec						
145	equinox						
146	epoch						
147	V magnitude						
148	b magnitude						
149	RA err(s)						
150	RAerr ("")						
151	DEC err("")						
152	V err(m)						
153	RA (deg)	0	0	0	0	0	0
154	DEC (deg)	0	0	0	0	0	0
155	RAerr(deg)	0	0	0	0	0	0
156	DECerr(deg)	0	0	0	0	0	0
157	mu ra (s/yr)						
158	mu dec ("/yr)						
159	Sep (E-*) ('')	846.008936	675.862874	2229.73253	1348.88173	1212.2117	2635.87963
160	PA (E of N)	148.42697	42.211568	178.178681	176.509095	1.80959754	-2.611962
161	Date1						
162	Date2						
163	HIP pressure						
164		25.3380582	26.0044554	25.3380582	26.0044554	25.3380582	
165		10.4659636	10.7146498	10.4659636	10.7146498	10.4659636	
166							

ORIGINAL PAGE IS  
OF POOR QUALITY

	H	I	J	K	L	M	N	O
134								
135								
136								
137								
138								
139								
140								
141								
142								
143								
144								
145								
146								
147								
148								
149								
150								
151								
152								
153	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0
157								
158								
159	3840.2168	5222.936593	3135.29856	5259.990931	2138.21823	3280.18087	2515.86266	2546.23897
160	180.800493	-0.78918805	187.636457	-3.35525017	210.209872	-31.127046	-57.074396	-82.94031
161								
162								
163								
164	26.0044554	25.33805816	25.3380582	25.33805816	26.0044554	26.0044554	25.3380582	25.3380582
165	10.7146498	10.46596362	10.46596362	10.46596362	10.7146498	10.7146498	10.4659636	10.4659636
166								

## HIP-EGO.Data

	P	Q	R	S	T	U	V	W
134								
135								
136								
137								
138								
139								
140								
141								
142								
143								
144								
145								
146								
147								
148								
149								
150								
151								
152								
153	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0
157								
158								
159	4438.84024	3747.94594	4148.78657	4150.84812	5277.776886	3982.65454	5355.00366	5975.82888
160	183.777395	-55.062641	-37.577646	-67.543381	-12.1703247	204.021482	-84.150045	-76.476893
161								
162								
163								
164	26.0044554	26.0044554	26.0044554	26.0044554	26.0044554	26.0044554	26.0044554	25.3380582
165	10.7146498	10.7146498	10.7146498	10.7146498	10.7146498	10.7146498	10.7146498	10.4659636
166								

	X	Y	Z	AA	AB	AC	AD	AE
134								
135								
136								
137								
138								
139								
140								
141								
142								
143								
144								
145								
146								
147								
148								
149								
150								
151								
152								
153	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0
157								
158								
159	5611.151	4619.96916	4151.76194	6094.17185	5992.42657	5656.02892	6380.94408	7754.99253
160	-58.952031	239.993024	209.57518	264.693302	258.85818	252.51415	257.965519	-80.72059
161								
162								
163								
164	26.0044554	26.0044554	26.0044554	26.0044554	25.3380582	26.0044554	25.3380582	25.3380582
165	10.7146498	10.7146498	10.7146498	10.7146498	10.4659636	10.7146498	10.4659636	10.4659636
166								

## HIP-EGO.Data

	AF	AG	AH	AI	AJ	AK	AL	AM
134			INCA220-828					
135								
136		HD98224						
137								
138			11					
139			12					
140			48					
141			-1					
142			-46					
143			11					
144			0					
145			1900					
146								
147			10					
148			9.5					
149								
150			120					
151			60					
152								
153	0	0	168.2	0	0	0	0	0
154	0	0	-46.183333	0	0	0	0	0
155	0	0	0	0	0	0	0	0
156	0	0	0.01666667	0	0	0	0	0
157								
158								
159	8016.95536	7531.89796	13.8541019	7689.98837	6865.87496	7801.28169	8007.73854	8289.66332
160	-88.051424	-69.944022	226.622946	-67.562634	-57.213332	-67.16529	260.088532	261.706685
161								
162								
163								
164	26.0044554	25.3380582	168.782505	26.0044554	25.3380582	25.3380582	25.3380582	25.3380582
165	10.7146498	10.4659636	-46.456082	10.7146498	10.4659636	10.4659636	10.4659636	10.4659636
166								

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ORIGINAL PAGE IS  
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	AN	AO	AP	AQ	AR	AS	AT	AU
134								
135								
136								
137								
138								
139								
140								
141								
142								
143								
144								
145								
146								
147								
148								
149								
150								
151								
152								
153	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0
157								
158								
159	8490.31649	9684.15701	9214.87394	10130.7002	9856.16655	11254.2442	7102.2546	6051.05002
160	262.888579	-86.923534	-76.247087	-82.762989	263.800551	-88.851328	248.349206	238.365674
161								
162								
163								
164	26.0044554	26.0044554	26.0044554	26.0044554	26.0044554	25.3380582	26.0044554	26.0044554
165	10.7146498	10.7146498	10.7146498	10.7146498	10.7146498	10.4659636	10.7146498	10.7146498
166								

	AV	AW	AX	AY	AZ	BA	BB	BC
134	INCA220-1153							
135								
136	INCA220-1153							
137	1	221-102						
138		14						
139		51						
140		33						
141		-1						
142		37						
143		44						
144		7						
145		1950						
146								
147		10.7						
148								
149								
150								
151								
152								
153		222.8875	0	0	0	0	0	0
154		-37.7352778	0	0	0	0	0	0
155		0	0	0	0	0	0	0
156		0	0	0	0	0	0	0
157								
158								
159	9.212329318	12038.5153	12678.1781	10643.1674	9378.31091	6078.8432	7652.87852115	
160	161.4425284	-84.332457	-87.803743	261.107697	255.2511	234.117433	-53.652271571	
161								
162								
163								
164	222.8875	26.0044554	26.0044554	25.3380582	26.0044554	25.3380581598		
165	-37.7352778	10.7146498	10.7146498	10.4659636	10.7146498	10.4659636169		
166								

ORIGINAL PAGE IS  
OF POOR QUALITY

	BD	BE	BF	BG	BH	BI	BJ	BK
134							INCA163-317?	
135							Lowell	
136							ANON317?	
137							221-133	
138							20	
139							7	
140							7	
141							1	
142							77	
143							53	
144							58	
145							1950	
146								
147							11.7	
148							10.3	
149								
150								
151								
152								
153	0	0	0	0	0	0	301.7791667	0
154	0	0	0	0	0	0	77.8994444	0
155	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0
157								
158								
159	13349.1119	9860.167591	14090.1662	5815.993921	11443.573133	10.0254773	16493.9859	
160	265.345164	-66.5230718	-80.203711	229.2669019	-71.84024249	-5.2451632	-84.300224	
161								
162								
163								
164	25.3380582	25.33805816	26.0044554	26.00445541	25.33805816	301.3064263	25.3380582	
165	10.4659636	10.46596362	10.7146498	10.71464976	10.465963617	78.04506384	10.4659636	
166								

## HIP-EGO.Data

	BL	BM	BN	BO	BP	BQ	BR	BS
134	INCA163-344							
135	Argue							
136	SAO164461							
137								
138	21							
139	29							
140	39.231							
141	-1							
142	-12							
143	29							
144	19.7							
145	1950							
146	1902.4							
147	6.9							
148	8.4							
149								
150	0.1							
151	0.12							
152								
153	322.4134625	0	0	0	0	0	0	0
154	-12.4888056	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0
156	3.33333E-05	0	0	0	0	0	0	0
157	0.0025							
158	-0.02							
159	14.48896796	17898.14271	13657.5746	18513.2883	12847.215497	16545.9863	16191.12411	18300.49767
160	128.1690294	-88.0757876	262.029567	-86.420692	-73.91506975	266.305804	-80.7638189	268.9792519
161								
162								
163								
164	323.0910951	26.00445541	26.0044554	25.33805816	26.0044554	26.00445541	26.00445541	26.00445541
165	-12.2672352	10.71464976	10.7146498	10.7146498	10.465963617	10.7146498	10.71464976	10.71464976
166								

ORIGINAL PAGE IS  
OF POOR QUALITY

	BT	BU	BV	BW	BX	BY	BZ	CA
134								
135								
136								
137								
138								
139								
140								
141								
142								
143								
144								
145								
146								
147								
148								
149								
150								
151								
152								
153	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0
157								
158								
159	18926.8014	17037.2745	8502.509034	13090.5872	0	6355.31605	9215.12704	
160	-89.456076	-82.169315	-56.1851372	259.670487	#DIV/0!	248.20281	262.59497	
161								
162								
163								
164	26.0044554	26.0044554	25.33805816	26.0044554		25.3380582	26.0044554	
165	10.7146498	10.7146498	10.46596362	10.7146498		10.4659636	10.7146498	
166								

## HIP-EGO.Data

	CB	CC	CD	CE	CF	CG	CH	CI
134								
135								
136								
137								
138								
139								
140								
141								
142								
143								
144								
145								
146								
147								
148								
149								
150								
151								
152								
153	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0
157								
158								
159	10480.4086	10504.3999	15601.0466	21600	1400.08877	2115.56808	2174.54119	1886.86809
160	260.421714	260.433566	265.357362	90	16.9685175	2.35838344	-20.85006	-66.59636
161								
162								
163								
164	26.0044554	26.0044554	26.0044554	360	26.0044554	26.0044554	26.0044554	26.0044554
165	10.7146498	10.7146498	10.7146498	0	10.7146498	10.7146498	10.7146498	10.7146498
166								

	CJ	CK	CL	CM	CN	CO	CP	CQ
134								
135								
136								
137								
138								
139								
140								
141								
142								
143								
144								
145								
146								
147								
148								
149								
150								
151								
152								
153	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0
157								
158								
159	2759.59738	5125.39856	6545.24469	8635.90575	9124.87478	13664.3737	17656.8231	19110.5487
160	-76.149832	-23.806129	-76.765996	-79.77945	-85.809488	-88.626195	-84.983254	-85.094839
161								
162								
163								
164	26.0044554	26.0044554	26.0044554	26.0044554	26.0044554	26.0044554	26.0044554	26.0044554
165	10.7146498	10.7146498	10.7146498	10.7146498	10.7146498	10.7146498	10.7146498	10.7146498
166								

ORIGINAL PAGE IS  
OF POOR QUALITY

TABLE II

ST/HIP	SAO	RA	DEC	MAG	N.O./N.R.	SPOCKE DIAGNOSIS	REMARKS / TV INSPECT.
1 008	74548	010858	222725	1950	7. V 2	3 3	
2 008	109727	010956	021228	1950	7. V 2	3 3	A
3 008	74560	011011	223425	1950	9. V 2	3 2	
4 008	109741	011109	021758	1950	9. V 2	3 2	A
5 008	109751	011205	020207	1950	9. V 2	3 2	
6 008	147700	011318	-114825	1950	9. V 2	2 1	A
7 008	109825	011902	035946	1950	9. V 2	3 2	
8 998	129297	012349	-002851	1950	9. P 2	3 2	A
9 998	—	012402	-001358	1950	11. P 2	3 1	A
10 999	—	013304	324759	1950	2	3 1	A
11 008	37354	013335	474907	1950	8. V 2	3 2	
12 008	37358	013347	474928	1950	9. V 2	3 1	
13 999	—	013445	-244942	1950	—	—	
14 999	—	013450	324634	1950	2	3 1	
15 999	—	013453	325635	1950	1	3 1	A
16 999	—	013504	-242650	1950	2	—	
17 008	167194	013611	-244203	1950	10. V 2	—	
18 008	129448	013848	-093726	1950	9. V 2	2	1
19 999	—	014915	741108	1950	2	3 1	A
20 008	74999	015022	214426	1950	8. V 2	3 2	
21 008	193356	015029	-332911	1950	9. V 2	—	
22 008	193363	015050	-333327	1950	8. V 2	—	
23 999	—	015312	742251	1950	2	3 1	
24 999	—	015538	742642	1950	2	3 1	A
25 008	92782	020216	150323	1950	9. V 2	3 2	A
26 008	4613	021349	732258	1950	9. V 2	3 1	
27 008	12298	022454	671045	1950	5. V 2	3 3	A
28 008	12301	022525	671231	1950	9. V 2	3 2	
29 008	12306	022600	671135	1950	9. V 2	3 2	A
30 008	75469	023403	284114	1950	9. V 2	3 2	A
31 008	75488	023524	282800	1950	9. V 2	3 2	A
32 999	—	023742	-233239	1950	2	—	
33 999	—	023814	-232733	1950	2	—	
34 998	—	023815	-231649	1950	10. 1	—	
35 008	12419	024028	620242	1950	8. V 2	3 2	A
36 008	12425	024049	622434	1950	9. V 1	3 1	A
37 999	—	024111	622253	1950	2	3 1	
38 999	12434	024218	620201	1950	2	3 1	
39 008	110894	025721	073305	1950	8. V 2	3 2	A
40 999	38715	031539	410018	1950	2	3 2	
41 999	—	031552	410525	1950	2	3 1	
42 999	—	031706	411132	1950	2	3 1	A
43 998	—	040145	-361850	1950	11. P 2	—	
44 008	194728	040207	-361450	1950	10. V 2	—	
45 008	194745	040301	-355822	1950	8. V 3	—	
46 008	194746	040302	-355826	1950	8. V 3	—	
47 999	—	040501	-121803	1950	2	2 1	A
48 999	—	040532	-121733	1950	1	3 1	
49 999	—	040545	-121701	1950	1	3 1	
50 998	—	042200	002858	1950	11. P 1	4 1	
51 999	—	042200	003747	1950	2	4 2	A
52 008	194991	042252	-374330	1950	9. V 2	—	
53 998	—	042253	002827	1950	11. P 1	3 2	A
54 998	—	042353	-381017	1950	10. P 2	—	
55 999	111881	042927	053113	1950	2	4 2	
56 998	—	042958	052105	1950	10. P 1	3 1	A
57 999	—	043037	052320	1950	2	4 1	
58 998	111893	043111	051705	1950	8. P 2	4 3	
59 999	—	044700	842944	1950	2	3 2	
60 999	793	045530	842428	1950	2	3 1	A
61 999	804	045907	841955	1950	2	3 2	
62 008	170501	052848	-250018	1950	9. V 2	—	
63 008	112887	053001	073024	1950	9. V 2	3 2	
64 008	112889	053012	071726	1950	8. V 2	3 3	
65 008	112890	053015	071745	1950	9. V 2	3 1	► ~ 20" PAIR
66 008	217442	053643	-440704	1950	9. V 2	—	
67 998	—	053735	-440812	1950	11. P 2	—	
68 008	132447	053825	-053527	1950	9. V 2	3 2	A
69 008	58576	055229	394827	1950	9. V 2	3 2	
70 008	58580	055241	394205	1950	9. V 2	3 2	A
71 008	132862	060518	-083834	1950	9. V 2	3 3	A
72 008	151166	060652	-154131	1950	8. V 3	1 1	
73 999	—	060655	-154153	1950	3	1 0	
74 999	—	060731	-153805	1950	2	1 0	
75 999	—	060741	-154327	1950	2	1 0	
76 998	—	060759	-155253	1950	11. P 2	1 0	
77 008	986	061119	815837	1950	10. V 2	3 1	A
78 008	1002	061823	821135	1950	10. V 2	3 1	A
79 008	59893	071008	354630	1950	9. V 2	3 2	A
							ALSO FAINT 10" COMP.

REDUCED  
DATA  
FROM  
LOWELL  
OBSERVATORY

Diagnosis  
blank = OK  
A = Avoid  
— = No reduced  
Data

						N.O. N.R.	SPECKLE DIAGN.	REMARKS/ "TV" MONIT. INSPECTED
008	6141	071243	710034	1950	9. V 2	3 2	A	ALSO VERY FAINT 10" COMP
52 008	6152	071421	712050	1950	8. V 1	4 3	A	
.83 999	—	071423	712618	1950	2 3	2		
.84 999	—	071546	711431	1950	2 3	2		
85 008	134649	072314	-003639	1950	9. V 2	2 1		
86 008	→ 97099	073518	175719	1950	9. V 2	2 1		
87 008	97100	073518	175807	1950	9. V 1	2 1		Faint 6" COMP.
88 999	→ SAME*	073519	175719	1950	2 1 0		—	≡ 97099
89 999	97109	073548	180602	1950	2 2	2 1		
90 998	—	073608	015336	1950	10. P 2	2 1		Faint 20" COMP.
91 998	—	073623	020134	1950	10. P 2	2 1		
92 008	97213	074229	103033	1950	9. V 2	2 1		
93 008	135061	074238	-002636	1950	9. V 2	2 1		
94 008	135064	074248	-002329	1950	8. V 2	2 2		
95 008	97219	074301	103108	1950	8. V 2	2 2		
96 008	42188	080502	495156	1950	9. V 2	2 1		
97 999	—	081851	-124000	1950	2 2	1		
98 999	—	081902	-123758	1950	2 2	1		
99 999	—	081941	-123726	1950	2 2	1		
100 998	—	082454	-371540	1950	10. P 2	—		
101 008	199266	082619	-373348	1950	9. V 2	—		
102 998	—	082655	-371132	1950	10. P 2	—		
103 008	42403	082733	492903	1950	8. V 2	2 1		
104 008	80229	082833	241504	1950	6. V 2	2 2		
105 008	42421	082939	492607	1950	8. V 2	2 1		
106 008	26921	083224	584554	1950	9. V 2	2 1		
107 999	—	083257	710005	1950	2 2	1		
108 999	—	083928	705921	1950	2 2	1		
109 999	—	084035	711459	1950	2 2	1		
110 008	80493	085108	202514	1950	8. V 2	2 1		
111 008	154848	085917	-141340	1950	9. V 2	2 1		
112 008	154848	085917	-141340	1950	9. V 2	—		
113 999	—	091154	295041	1950	2 2	1		A
114 999	—	091234	300004	1950	2 2	1		
115 999	—	091236	295554	1950	2 2	1		A
116 999	—	091254	294234	1950	3 2	1		A
117 999	—	091424	293945	1950	2 2	1		
118 008	177329	091932	-255804	1950	9. V 2	—		
119 008	61482	092251	391148	1950	9. V 2	2 1		
120 008	61491	092332	390739	1950	9. V 2	2 1		
121 008	15039	095534	653439	1950	9. V 2	1 0		
122 999	—	095544	323730	1950	1 2	1		
123 999	—	095550	324930	1950	2 2	1		
124 008	61792	095615	324042	1950	9. V 1	2 1		
125 008	98956	100441	141018	1950	9. V 2	1 0		
126 999	—	101933	310429	1950	2 2	1		
127 999	—	101950	-101705	1950	2 2	1		
128 999	—	102009	310847	1950	2 2	1		
129 008	62008	102011	310525	1950	8. V 1	2 1		
130 008	27683	103041	564141	1950	9. V 2	1 0		
131 008	179004	103300	-200802	1950	9. V 2	—		
132 008	179054	103527	-291909	1950	9. V 2	—		
133 998	—	103737	062752	1950	11. P 2	2 1		
134 998	—	103800	060917	1950	10. P 1	2 1		
135 998	—	103825	062204	1950	10. P 2	2 1		
136 008	118598	105613	015952	1950	8. V 2	1 1		
137 008	81810	112226	262524	1950	8. V 2	1 0		
138 999	—	112623	-143846	1950	2 1 0			
139 998	—	112641	-143116	1950	11. P 2	1 0		
140 999	—	112742	-142358	1950	2 1 0			
141 998	—	112802	-142448	1950	11. P 2	1 0		
142 999	—	112806	-144940	1950	2 1 0			
143 008	118919	113049	010447	1950	9. V 2	1 0		
144 008	202788	114335	-375203	1950	9. V 2	—		
145 008	180169	114338	-243542	1950	8. V 2	—		
146 008	180172	114350	-242717	1950	10. V 2	—		
147 008	180174	114355	-244152	1950	8. V 2	—		
148 008	202795	114405	-375219	1950	9. V 2	—		
149 008	43932	115017	494027	1950	9. V 1	1 0		
150 999	43937	115054	492526	1950	2 1 0			
(151) 999	—	115101	495246	1950	1 1 0			
152 008	1952	115238	811613	1950	9. V 2	1 0		
153 008	82078	115533	244633	1950	9. V 2	1 0		
154 999	—	121130	331448	1950	2 1 0			
155 999	—	121152	332826	1950	1 1 0			
156 008	62912	121227	333202	1950	8. V 1	1 1		
157 999	—	121507	303920	1950	2 1 0			
158 008	62943	121600	303141	1950	6. V 1	1 1		A
159 999	62945	121624	304446	1950	2 1 1			A
160 999	= 1111	121922	292529	1950	2 1 0			

				N.O./ N.R.	SPECKLE DIAGN.	REMARKS / TV MONITOR INSPECTION
999 999	160	—	121922	282538 1950	2	— —
999 999	—	—	121926	284916 1950	2	1 1
63 999	—	—	122030	283538 1950	2	1 0
164 998	—	—	122550	021648 1950 11. P 2	1	0
165 998	—	—	122612	021849 1950 11. P 2	1	0
166 998	—	—	122633	021943 1950 13. P 2	0	0
167 998	—	—	122649	021516 1950 10. P 1	1	0
168 999	11943	—	122737	023028 1950	2	1 0
169 999	—	—	122830	022307 1950	2	1 0
170 998	—	—	124401	-253233 1950 11. P 2	—	—
171 998	—	—	124402	-252333 1950 11. P 2	—	—
172 008	181097	—	124432	-254311 1950 9. V 2	—	—
173 008	157525	—	124617	-194202 1950 9. V 2	—	—
174 999	—	—	125137	120726 1950	2	1 0
175 008	100328	—	125202	121040 1950 9. V 1	1	0
176 008	100330	—	125222	114506 1950 9. V 2	1	0
177 999	—	—	125253	120239 1950	2	1 0
178 998	—	—	125301	-052222 1950 11. P 2	1	0
179 998	—	—	125321	-054747 1950 11. P 2	1	0
180 008	203907	—	125534	-312506 1950 10. V 2	—	—
181 008	203990	—	125543	-313321 1950 10. V 2	—	—
182 008	157711	—	130304	-101403 1950 9. V 1	—	—
183 999	157718	—	130325	-104538 1950	3	—
184 008	157724	—	130352	-101141 1950 9. V 4	—	—
185 008	63390	—	130908	323334 1950 9. V 2	0	0
186 008	16015	—	131123	674921 1950 9. V 2	0	0
187 008	204292	—	131239	-331520 1950	2	—
188 008	16025	—	131345	674527 1950 9. V 2	0	0
189 008	63533	—	132337	320717 1950 8. V 2	0	0
190 008	63577	—	132835	304757 1950 9. V 2	0	0
191 008	63578	—	132838	305655 1950 9. V 2	0	0
192 999	—	—	133101	165737 1950	2	0 0
193 999	—	—	133155	164741 1950	2	0 0
194 999	—	—	133233	171644 1950	2	0 0
195 999	100696	—	134312	123040 1950	2	0 0
196 999	—	—	134359	122347 1950	2	0 0
197 999	—	—	134540	124647 1950	2	0 0
198 008	224510	—	135028	-440642 1950 10. V 2	—	—
199 008	150248	—	135404	-152300 1950 9. V 2	—	—
200 999	—	—	140426	284319 1950	1	2 2
201 008	83172	—	140441	284031 1950 7. V 1	2	2
202 999	—	—	140535	284656 1950	2	2 2
203 999	120390	—	141609	062744 1950	2	2 2
204 999	—	—	141700	063629 1950	2	2 2
205 999	—	—	141723	064550 1950	2	2 2
206 999	—	—	141813	543303 1950	1	2 2
207 008	29105	—	141838	544404 1950 9. V 1	2	2
208 999	29110	—	141853	545416 1950	2	2 2
209 008	158625	—	142935	-173939 1950 9. V 2	—	—
210 008	16441	—	143508	634054 1950 7. V 2	2	2
211 999	16446	—	143706	641653 1950	3	2 2
212 999	16453?	—	143756	643022 1950	3	2 2
213 999	16455	—	143818	642204 1950	3	2 2
214 008	101177	—	144202	101015 1950 9. V 2	2	2
215 008	101198	—	144331	101542 1950 8. V 2	2	2
216 999	—	—	145017	-373735 1950 11. P 2	—	—
217 999	—	—	145021	-133629 1950 11. P 2	—	—
218 999	—	—	145628	712639 1950	2	2 2
219 999	—	—	150018	713836 1950	2	2 2
220 008	8140	—	150021	715739 1950 7. V 1	2	2
221 999	—	—	150837	-053115 1950	1	2 2
222 999	140370	—	150904	-053902 1950	2	2 2
223 999	140371	—	150905	-051713 1950	2	2 2
224 999	140373	—	150910	-083909 1950	2	2 2
225 999	—	—	150944	-090426 1950	2	2 2
226 999	140401	—	151140	-083932 1950	2	2 2
227 999	—	—	151435	-235659 1950 12. P 2	—	—
228 008	183344	—	151438	-241740 1950 9. V 1	—	—
229 008	183347	—	151440	-241444 1950 9. V 1	—	—
230 998	—	—	151533	-241324 1950 12. P 1	—	—
231 008	183357	—	151539	-240402 1950 8. V 2	—	—
232 008	183410	—	151947	-271442 1950 9. V 2	—	—
233 008	121210	—	154720	023906 1950 8. V 2	5	5
234 008	121281	—	155506	000305 1950 9. V 2	5	5
235 008	121283	—	155535	01132 1950 10. V 2	5	5
236 008	65038	—	160045	333330 1950 9. V 2	2	2
237 008	84214	—	160701	265728 1950 9. V 2	2	2
238 008	84223	—	160800	265218 1950 7. V 2	2	2
239 008	65401	—	163249	380552 1950 8. V 2	5	5
240 008	45407	—	163324	381044 1950 9. V 2	5	5

SEE # 160 !

ORIGINAL PAGE IS  
OF POOR QUALITYALSO 30" COMP.  
20" PAIR

							N.O./ N.R.	SPECKLE DIAGN.	REMARKS / TV MONIT. INSPECTION
008	65424	163412	380404	1950	9.	V 2	5 5	A	
42 999	30014	163512	572533	1950			5 5		
243 999	—	163533	572657	1950			2 2		
244 008	65473	163822	395119	1950	9.	V 2	5 5		
245 999	30044	163946	572425	1950			2 2		
246 999	—	164110	394316	1950			2 2	A	O
247 999	—	164157	400037	1950			1 2	A	O
248 999	121960	165504	053006	1950			2 4	A	
249 999	—	165525	045002	1950			2 2		
250 999	—	165536	055137	1950			2 2	A	
251 999	—	165609	050351	1950			2 2		
252 999	—	165615	045354	1950			2 2	A	
253 008	184915	165756	285206	1950	9.	V 2	—	—	
254 008	102732	171638	180044	1950	9.	V 2	5 5	A	
255 008	102735	171646	173536	1950	9.	V 2	5 5	A	
256 999	65491	172043	343955	1950			2 2	A	
257 008	65993	172054	341318	1950	8.	V 2	2 2	A	
258 999	—	172125	343014	1950			2 2	A	
259 999	—	172226	343700	1950			2 2	A	
260 008	122400	172504	043108	1950	9.	V 2	5 5	A	ALSO 10" COMP.
261 008	122404	172513	042211	1950	8.	V 2	5 5	A	
262 999	—	172557	501926	1950			2 2		
263 008	→ 30405	172715	501210	1950	9.	V 1	—	—	
264 999	→ SAME R	172716	501210	1950			—	—	SAME AS #263
265 008	30412	172744	501853	1950	9.	V 1	2 2		
266 008	30415	172752	500731	1950	7.	V 1	2 2	A	
267 008	30419	172817	501838	1950	9.	V 2	2 2	A	
268 008	66142	173224	385900	1950	9.	V 2	2 2	A	
269 008	46881	173837	474513	1950	9.	V 2	2 2		
270 008	141833	174106	-035336	1950	8.	V 2	5 5		
271 008	141841	174147	-034947	1950	9.	V 2	5 5		
272 999	—	174404	700529	1950			1 1		
273 999	8901	174533	702801	1950			1 1	A	
274 999	122820	174815	093318	1950			4 4		
275 008	122838	174912	094811	1950	9.	V 1	4 4		
276 008	185880	174929	-253052	1950	9.	V 2	—	—	
277 999	—	174938	094123	1950			1 1		
278 008	47024	175041	440745	1950	9.	V 2	1 1		Faint 30" COMP
279 008	8937	175042	700914	1950	9.	V 1	1 1	A	
280 008	47038	175141	441115	1950	9.	V 2	1 1		
281 008	47042	175229	441022	1950	9.	V 2	1 1		
282 999	—	180334	782637	1950			1 1	A	
283 999	—	180413	781953	1950			1 1		
284 999	—	180558	782801	1950			1 1		
285 998	—	182052	104215	1950	10.	P 2	1 1		
286 998	—	182117	105507	1950	11.	P 2	1 1		
287 999	—	182128	104050	1950			1 1		
288 008	103672	182136	105119	1950	9.	Y 1	3 3	A	
289 008	103673	182137	103123	1950	8.	V 2	3 3	A	
290 008	103677	182148	105547	1950	8.	V 2	3 3		
291 998	—	182204	105038	1950	10.	P 1	1 1	A	
292 999	—	182728	490027	1950			1 1		
293 999	—	182801	483930	1950			1 1	A	
294 999	—	182818	484927	1950			1 1	A	
295 008	47545	182851	483408	1950	9.	V 2	2 2		ALSO FT. 10" COMP
296 999	—	182958	282311	1950			1 1		
297 008	86173	183035	282115	1950	9.	V 1	3 3	A	
298 008	86188	183113	282400	1950	9.	V 1	3 3	A	
299 008	187783	190800	-200323	1950	9.	V 2	—	—	
300 008	187789	190821	-202550	1950	8.	V 2	—	—	
301 008	187802	190900	-201949	1950	9.	V 2	—	—	
302 008	187804	190901	-200253	1950	9.	V 2	—	—	
303 008	188093	192155	-292427	1950	6.	V 2	—	—	
304 999	—	192744	735938	1950			2 2		
305 999	—	192759	734731	1950			1 2		
306 999	9456	193244	740759	1950			2 2		
307 008	211415	193347	-395119	1950	8.	V 2	—	—	
308 008	162048	193614	-153652	1950	9.	V 2	—	—	
309 008	162058	193645	-152916	1950	9.	V 2	—	—	
310 008	162072	193719	-152327	1950	9.	V 2	—	—	
311 008	125096	194644	080903	1950	9.	V 2	2 2		
312 008	125102	194712	080048	1950	9.	V 2	2 2		
313 008	125107	194728	075405	1950	9.	V 2	2 2		
314 008	125116	194751	074629	1950	6.	V 2	2 2		
315 008	163176	195752	-180537	1950	9.	V 2	—	—	
316 008	9622	200423	774547	1950	8.	V 1	2 2		
317 999	—	200707	775358	1950			2 2		
318 008	144138	200810	-064602	1950	9.	V 2	1 1	A	
319 999	—	200827	780146	1950			2 2		
320 008	163324	200836	-160051	1950	10.	V 2	—	—	

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						N.O./ N.R.	SPECKLE DIAGN.	REMARKS/TV MONIT. INSPECT.
321 008	9657	200944	774035	1950	8. V 2	Z Z		
322 008	9662	201015	773616	1950	10. V 2	Z Z		
323 008	9665	201036	773342	1950	4. V 2	Z Z	A	
324 008	18812	201934	613409	1950	10. V 2	Z Z	A	ALSO 10" COMP
325 008	18815	201944	612159	1950	9. V 2	Z Z	A	ALSO 20" COMP
326 008	18836	202207	612504	1950	9. V 2	Z Z		
327 008	32639	202905	544900	1950	9. V 2	Z Z		
328 008	32741	203617	511721	1950	8. V 2	Z Z		
329 008	32746	203624	505548	1950	9. V 2	Z Z		
330 008	32758	203724	510235	1950	9. V 2	Z Z	A	ALSO 5" COMP
331 008	32765	203744	510658	1950	8. V 2	Z Z	A	
332 999		204342	-165253	1950	—	—		
333 999		204445	-165500	1950	—	—		
334 008	163888	204524	-165523	1950	8. V 1	—		
335 008	230558	210714	-412718	1950	9. V 2	—		
336 008	89550	211212	292234	1950	9. V 2	Z Z		
337 008	89564	211304	291704	1950	9. V 2	Z Z		
338 999	—	212729	-120518	1950	2 / /	A		
339 999	—	212801	-120008	1950	2 / /			
340 999	—	212821	044411	1950	2 Z Z	A		
341 008	→164452	212852	-120931	1950	9. V 2	/ /		
342 999	→SAME*	212853	-120932	1950	2 —	—	≡ # 341	
343 998	—	212936	-121735	1950	11. P 2	/ /		
344 008	164461	212939	-122920	1950	7. V 2	/ /		
345 008	145482	213037	-020723	1950	9. V 2	/ /		
346 008	145490	213111	-021217	1950	9. V 2	/ /		
347 008	145504	213204	-021308	1950	9. V 2	/ /		
348 008	126915	213322	002721	1950	9. V 2	/ /		HAS 6" COMP
349 008	107307	213717	142116	1950	9. V 2	/ /		
350 008	127056	214426	090824	1950	9. V 2	/ /		
351 008	127062	214505	065307	1950	9. V 2	/ /		
352 008	127069	214544	064756	1950	9. V 2	/ /		
353 008	127070	214553	063506	1950	9. V 2	/ /	A	
354 008	164768	215504	-152142	1950	7. V 2	—		
355 008	164774	215528	-151948	1950	9. V 2	—		
356 008	164783	215606	-152208	1950	9. V 2	—		
357 008	51545	215839	420316	1950	9. V 2	/ /		
358 999	—	220002	420816	1950	2 / /			
359 999	51584	220022	421100	1950	2 / /			
360 008	71982	220055	313723	1950	9. V 2	/ / A		
361 999	—	220111	421926	1950	2 / /			
362 999	—	220121	314936	1950	2 / /	A		
363 008	164854	220303	-185444	1950	8. V 2	—		
364 999	—	221527	-040401	1950	2 / /			
365 999	—	221531	-040015	1950	2 / /			
366 999	—	221540	-035704	1950	2 / /			
367 008	146083	222330	-052557	1950	8. V 2	/ /		
368 008	146122	222718	-084030	1950	9. V 2	/ /		
369 008	90642	223420	282008	1950	9. V 2	/ /		
370 008	90650	223444	280701	1950	9. V 2	/ /		
371 998	—	224329	-122629	1950	11. P 2	/ /	A	
372 008	165283	224330	-122522	1950	8. V 2	/ /	A	
373 008	214107	224624	-330056	1950	9. V 2	—	—	
374 008	214113	224641	-324920	1950	9. V 2	—	—	
375 999	—	224738	135901	1950	2 / /			
376 999	—	224741	141011	1950	2 / /			
377 999	—	224757	140357	1950	2 0 0	—	NOT FOUND	
378 008	108213	224822	135258	1950	9. V 2	/ /		
379 999	—	224905	140645	1950	2 / /			
380 999	108232	225042	161433	1950	2 / /			
381 999	—	225119	160132	1950	2 / /			
382 008	108243	225155	154351	1950	9. V 2	/ /		
383 008	→52500	225336	414231	1950	8. V 2	/ /		
384 008	→52500	225336	414231	1950	8. V 2	—	—	SAME AS # 383
385 999	—	225347	072816	1950	2 / /			
386 999	—	225348	072237	1950	2 / / A			
387 008	52518	225422	413922	1950	9. V 2	/ /		
388 999	—	225427	280138	1950	2 —	—		
389 008	127859	225445	072045	1950	9. V 1	/ /		
390 008	191527	225459	-281402	1950	8. V 1	—		
391 999	—	225531	-281601	1950	1 —	—		
392 008	191540	225556	-282504	1950	8. V 2	—		
393 008	128124	231736	050229	1950	9. V 2	/ /		
394 008	128126	231747	050629	1950	5. V 2	/ /		
395 999	—	231816	270858	1950	2 / /	A		
396 008	91194	231835	272327	1950	9. V 2	/ /		
397 999	—	231841	271620	1950	2 / /			
398 008	91223	232021	271800	1950	9. V 1	/ /		
399 008	146680	232048	-032922	1950	8. V 2	0 0	—	
400 008	165720	222917	-161572	1950	R V ?	—		

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008	108657	232849	103634	1950	8.	V 2	1	1	—	
102 999		233125	240201	1950	1	—	—	—	—	
103 999		233133	235213	1950	2	—	—	—	—	
104 999		233230	241058	1950	2	—	—	—	—	
105 999	91412	233732	263128	1950	2	1	1	—	—	
106 999	—	233742	262449	1950	2	1	1	—	—	Faint 10" comp
107 999	—	233811	263604	1950	2	1	1	—	—	
108 008	128378	234430	091615	1950	9.	V 2	1	1	—	
109 008	128381	234448	091148	1950	9.	V 2	1	1	A	2" PAIR!
110 008	165890	234534	165834	1950	8.	V 2	—	—	—	
111 008	53471	235202	454016	1950	9.	V 2	1	1	A	
412 008	53473	235218	452914	1950	9.	V 2	1	1	—	
113 008	53479	235243	493514	1950	9.	V 2	1	1	A	
114 008	53490	235322	493718	1950	9.	V 2	1	1	—	

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